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ABSTRACT

With some justification, the inability to answer most of the important questions in higher education is due to the lack of necessary information. But careful examination of our many faceted questions suggests that more information may not be the only answer. The National Center for Higher Education Management Systems (NCHEMS) has found other aspects to the postsecondary information problem. First, a huge communication gap often looms between those asking the fundamental questions and those in the best position to answer them. Second, information resources do exist, collected either by individual researchers for purposes of investigating a relatively narrow specific aspect of postsecondary education or for purposes not directly related to postsecondary education. The NCHEMS believes these data can be used in postsecondary education decision-making much more extensively than they have been used in the past. In pursuit of this hypothesis, NCHEMS called together people with unique knowledge of information needs and information availability at all levels: federal, state, and institutional both inside and outside the postsecondary education community. This document presents seven major papers delivered by these people at a seminar, and includes responses to each paper. (Author)

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Postsecondary Education Issues:

VISIBLE QUESTIONS

INVISIBLE ANSWERS

Proceedings of the
Fifth NCHEMS National Invitational Seminar
1974

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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The Western Interstate Commission for Higher Education (WICHE) is a public agency through which the 13 western states work together

. . . to increase educational opportunities for westerners.

. . . to expand the supply of specialized manpower in the West.

. . . to help universities and colleges improve both their programs and their management.

. . . to inform the public about the needs of higher education.

The Program of the National Center for Higher Education Management Systems at WICHE was proposed by state coordinating agencies and colleges and universities in the West to be under the aegis of the Western Interstate Commission for Higher Education. The National Center for Higher Education Management Systems at WICHE proposes in summary:

To design, develop, and encourage the implementation of management information systems and data bases including common data elements in institutions and agencies of higher education that will:

- provide improved information to higher education administration at all levels.
- facilitate exchange of comparable data among institutions.
- facilitate reporting of comparable information at the state and national levels.

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Foreword

We in postsecondary education are proficient and prolific question askers. Indeed, over the last few years we have honed and refined the salient questions in a variety of forums across the land. The questions sound like this: What are the characteristics of the students currently participating in postsecondary education? How do they differ from those not participating? What are the educational needs or desires of those not now participating in postsecondary education? What range of educational programs currently is available in various geographic areas? Are we training students in fields where jobs exist?

We have been better at asking questions than at answering them. With some justification, we have attributed our inability to answer most of the questions to a lack of necessary information. But careful examination of our many faceted questions suggests that more information may not be the only answer.

The National Center for Higher Education Management Systems at the Western Interstate Commission for Higher Education has begun to ask new questions about our ability to answer old but critical questions. What data are available that the postsecondary education community may not be aware of? How can data gathered for other purposes be applied to the problems of postsecondary education? Can these data be translated into compatible forms usable to postsecondary education?

In pursuing these new questions, the Center has indeed found other aspects to the postsecondary information problem. First, a huge communication gap often looms between those asking the fundamental questions and those in the best position to answer them. Clearly, the key aspects of the major questions and policy issues need to be defined in a way to make them more susceptible to analytic treatment. Second, information resources do exist that could cast light on many of our questions. Much of the available information has been collected by individual researchers for purposes of investigating a relatively narrow, specific aspect of postsecondary education. Other data gathered, like those by the Census Bureau and the Bureau of Labor Statistics, have been collected for purposes not directly related to postsecondary education.

While much of the existing information is isolated, remote, and sometimes incompatible in form, the National Center for Higher Education Management Systems believes these data can be used in postsecondary education decision making much more extensively and effectively than they have been used in the past.

In pursuit of this hypothesis, the Center called its fifth National Invitational Seminar, "Postsecondary Education Issues: Visible Questions--Invisible Answers." The fifty men and women called together for the Seminar were selected for their unique knowledge of information needs and information availability at all levels: federal, state, and institutional--both inside and outside the postsecondary education community. Seminar

participants met May 16 and 17, 1974, in Reston, Virginia, in an attempt to restate some of the recurring questions about postsecondary education in ways more amenable to acquiring specific answers, to identify areas in which available data can be applied to the resolution of these questions, to identify major gaps in information and in the analytic capability to deal with the information, and to discuss the priorities for filling these gaps.

This document includes the seven major papers presented at the Seminar and the responses to each of those major papers.

Joanne E. Arnold

Robert A. Wallhaus

National Center for Higher Education Management Systems

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THE NATIONAL COMMISSION ON THE FINANCING OF POSTSECONDARY EDUCATION: A CASE STUDY IN APPLYING AVAILABLE INFORMATION RESOURCES TO THE SOLUTION OF A MAJOR POLICY ISSUE

by

Ken Lawrence

Dr. Lawrence is an Associate Director of the Western Interstate Commission for Higher Higher Education and Director of the National Center for Higher Education Management Systems at WICHE. During 1973 he served as the Executive Director of the Presidentially appointed National Commission on the Financing of Postsecondary Education.

Policy development has two major aspects--the determination of objectives, and the determination of procedural policy to attain these objectives. A major trick in policy development is to be able to predict in the present the extent to which a particular procedural policy, if implemented, would achieve in the future its objectives. This paper focuses on the difficult and primitive art of bringing information to bear on policy development so as to provide some indication of the extent to which procedural policy, if implemented, would fulfill specified objectives.

It seems likely that those involved with the development of public policy will have more than a casual flirtation with these approaches to public policy development. It also seems likely that many will be skeptical of these approaches, while others will oppose them. Therefore, a few caveats concerning my views of the use of these approaches seem in order at the beginning:

1. These approaches are primitive at this stage and must be used accordingly.
2. At best, even when more fully developed, this kind of policy analysis is designed to be informative but not to make decisions or replace judgment on the part of the decision maker.
3. These approaches are data-dependent and are loaded with assumptions. Those who use these approaches must understand data limitations and the assumptions and limitations the approaches impose.

This paper is organized into three sections--what the Commission did, what the results were, and what we would like in the future.

WHAT THE COMMISSION DID

The National Commission on the Financing of Postsecondary Education attempted to project the degree to which a set of agreed upon national objectives for postsecondary education would be realized by the implementation of alternative proposals for financing postsecondary education. To do this the Commission had to:

1. Agree on a set of national objectives for postsecondary education.
2. Devise a data base to:
   (a) Describe the current pattern and level of financing and the current state of attainment of objectives in postsecondary education.
   (b) Provide the data necessary to support assumptions to be used in the analysis.
3. Devise an analytical procedure for estimating the impact of alternative financing policies on desired national objectives.
4. Carry out the analysis and lay out the resulting information in a comparative mode for use by the decision makers.

National Objectives for Postsecondary Education and Their Measures. The objectives adopted by the Commission explicitly and implicitly recognized two important facts:

1. Prior to the creation of the Commission a great deal of thought, study, and deliberation had gone into the development of national objectives for postsecondary education. The Commission's role in the development of national objectives was one of clarification as opposed to creation, setting forth the objectives in a clear and explicit manner so they could be used in conjunction with rigorous analysis.

2. The objectives selected describe the character rather than the purposes of postsecondary education. The Commissioners discussed the purposes of education, ranging from a broad social perspective to the more limited perspective of the individual, and from the one extreme of purely individual development to the other of manpower production and supply. After seven months of study and deliberation the Commission took the view that the purposes and substance of postsecondary education should be determined by institutions, students, and funders in response to their specific needs. Thus, the objectives the Commission selected to be used in conjunction with financing policy analysis described the character rather than the purposes of postsecondary education.

The Commission adopted eight objectives: three dealing with demand--student access, student choice, and student opportunity; four dealing with supply--institutional diversity, educational excellence, institutional independence, and institutional accountability; and one dealing with the sharing of responsibility for adequately financing postsecondary education.

Three of these objectives--access, independence, and diversity--were written into the law establishing the Commission. The Commission was required by Congress and the President to examine alternative financing proposals in light of these national goals. The Commission added five others needed to describe the desired character of postsecondary education in our pluralistic society.

Developing and agreeing to a set of national objectives is indeed difficult, but, as the Commission learned, not as difficult as trying to find suitable and acceptable criteria to indicate when the objectives have been realized. One of the major failures of the National Commission on the Financing of Postsecondary Education was its inability to find acceptable measures of success for the supply side of postsecondary education: institutional diversity, educational excellence, institutional independence, and institutional accountability. Measures put forward by the staff relative to these four objectives were, in general, rejected by the Commission and, in the Commission's final report, efforts to quantitatively assess the achievement of those four objectives were abandoned because of the lack of acceptable measures of their accomplishment.

The data base the Commission used to conduct its study was devised simultaneously with its efforts to understand the current levels and patterns of financing postsecondary education in 1972 and to describe the extent to which the national objectives it had adopted were attained in 1972. The Commission, of course, was not interested in the collection of just 1972 data, but of any valid and comparable data for preceding years that would help provide an understanding of trends of the behavior

of students and institutions in reaction to various financing policies. This paper does not describe the results of those studies; they are found both within the Commission's report and in an abbreviated paper prepared by myself entitled "Financing Postsecondary Education in the United States: A Personal Perspective of the Report of the National Commission on the Financing of Postsecondary Education," printed by the Education Commission of the States.

At this point it is important to describe briefly the principles of developing the data base used to arrive at the description of the current financing pattern levels and their impact on national objectives and used in the projective analysis of alternative financing policies. A complete description of the data base itself is contained in a staff document entitled "Towards a National Postsecondary Education Data Base: Experiences of the National Commission on the Financing of Postsecondary Education," by Daryl E. Carlson, James Farmer, and Richard E. Stanton.

Several principles were employed in the development of the Commission's data base.

- With one exception--a small survey of noncollegiate institutions--no new data collection efforts would be mounted. Existing data and data sources would be used.

- Whenever possible raw data would be used, as opposed to aggregated data.

- The data base would be computerized and available by terminal access through easily learned procedures to facilitate:
  - (a) The integration of the respective data files in order to increase the analytical utility of the data.
  - (b) Ready reference by researchers not familiar with computer processes.
  - (c) Queries into the data that otherwise might not have been undertaken because of their complexity.
  - (d) Demonstration of the usefulness of such an approach in data base management and in policy development.

- Appropriate security provisions would be made to protect the data base from inappropriate use.

- An appropriate array of statistical software programs would be available in association with the data base to enable the researchers to perform desired statistical analysis on the data.

The result was a data base of 23 files using over 120 million bytes of direct access storage. A fully documented description of all the data files is contained in a separate staff report on the National Commission entitled "NCFPE National Postsecondary Education Data Base Directory."

Both the number of data sets in the NCFPE data base and the size of many of the data sets are extensive. Of great service to the research staff was the capacity to access any piece of information in a matter of seconds. At the peak of staff research activities, all the data files together totaled over 120 million characters of data. Most of the data are as unstructured as possible. They are stored in basic but edited form. The hardware and software the staff selected allowed analysts to access the data quickly and to structure the data to suit information needs.

The Analytical Model: The Methodology for Projecting Forward the Extent to Which National Objectives Would be Achieved by the Implementation of the Respective Financing Alternatives

Clearly, the analytical model devised by the Commission was limited by three major factors: (1) the time available to the research staff to think through the problem and to devise the necessary supporting analytical techniques to overcome the various technical obstacles identified, (2) available data, and (3) the lack of criteria acceptable to the Commission to determine the achievement of objectives on the supply side. The importance of political acceptability of such criteria cannot be overstated.

A separate staff report describes the model developed by the Commission in appropriate technical language. The analytical model is a mathematical construct designed to estimate in quantitative terms the achievement of

the objectives resulting from the implementation of a particular financing plan. It addresses the question "What are the important interrelationships between and among changes in financing and the responses of students, institutions, and sources of financing?"

Achieving the objectives identified by the Commission depends on the concerted efforts of many decision makers. To direct a variety of financing mechanisms toward the attainment of one or more objectives requires an understanding of how the decisions of students, institutions, private donors, and the several levels of government are interrelated. When, for example, an institution changes its tuition, the change affects the students' willingness to enroll in that institution. When governments change their policies for institutional aid, the change affects the institutions' willingness to accept additional students. When governments change their tax policies toward foundations and private donors, the change affects the amount of private support provided to postsecondary education.

Analysts have, based on data derived from recent actual experience, estimated statistically the interrelationships of decisions by students, institutions, private donors, and the several levels of government. In essence, these expressions of cause and effect hypothesis respond to the general question "What are the effects of changes of policy variables on the decisions of students, institutions, and public and private donors, and therefore, on the achievement of objectives?" While not all of these important interrelationships have been derived

quantitatively, several have been. These quantitatively derived interrelationships provide sufficient basis for the development of an analytical model that can calculate the enrollment and dollar changes likely to occur as a result of changes in policy variables.

Steps of the Analytical Model*

The analytical model--a mathematical construct predicated upon specified assumptions--consists of a series of twelve steps.

The first step was to assume a set of enrollment projections for the period of the analysis and enter them in the computer. For this purpose, the 1973 projections of the National Center for Educational Statistics were used. These projections, which are used for federal program planning by the U.S. Office of Education, reflect recent demographic and enrollment trends but do not differentiate enrollments by level of student or type of institution. This differentiation was done by the Commission.... As there are no national projections of noncollegiate enrollments, it was assumed that such enrollments would increase at the same rate as the general population.

The second step was to enter into the computer the tuition changes proposed in each plan. Where no changes were proposed,...projected figures...were assumed. The projection was obtained by assuming an annual 5.8 percent rate of inflation for reported 1971-1972 tuition and fee income per student.

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*This section is quoted from page 252 of the report of the National Commission on the Financing of Postsecondary Education.

The third step was to enter into the computer the increase or decrease in student financial aid (grants only) proposed in each plan. These figures were differentiated by source (federal or state), institutional type, and student level.

The fourth step was to enter into the computer a figure for the maximum family income permitted for student grant eligibility. In most cases, additional student grants were limited to students from families with an annual income of $15,000 or less.

The fifth step was to enter into the computer the average current cost per student by level of enrollment and major institutional category. This information provides a basis for estimating the costs of enrollment changes resulting from the alternative financing plans. The cost figures used as a base were derived from HEGIS (Higher Education General Information Survey) reports....The differentiation by institutional type was based on an assumed ratio of 1 to 1.5 to 3.0 for lower, upper, and graduate division costs.

The sixth step was to project enrollment for 1977 and 1980 based on estimated enrollment responses to the tuition figures used in the second step. The student responses to tuition changes were calculated from studies conducted over the past several years. Most of these studies, using data for individual states and groups of states, have been based on observations over a period of five to ten years. Those that use data from the 1950s cover changes in the economy, selective and other factors that affect student decisions.

The figures used by the Commission in this sixth step were drawn from a study of student enrollment tuition response that was begun in 1960. The study covered four states--California, Massachusetts, North Carolina, and Pennsylvania....it was estimated that an increase of $100 in tuition would reduce enrollment by approximately 0.7 percent among upper-income students--with variations depending on the type of institution. In addition, there are cross effects--changes in enrollment in one institutional type resulting from tuition changes in another....it is estimated that an increase of $100 in tuition in one type of institution will, depending on the type of institution, increase enrollments in a competing type by .05 to 0.5 percent.

The seventh step was to calculate enrollments in 1977 and 1980, taking into account proposed changes in student aid (step three) as well as tuition change. In addition to the price responses in step six, a formula based upon the 1972 needs analysis procedures of the U.S. Office of Education was used to describe the financial need of students. Obviously, if these procedures change, it will also be necessary to change the formula used in this analysis.

The eighth step was to calculate net enrollment changes by subtracting the enrollment figures resulting from changes in financing from the original projections (in step one).

The ninth step was to calculate increases or decreases in the institutional cost resulting from the changes in enrollment produced by each financing plan. The change in cost represents the difference between tuition income and average institutional cost per student, multiplied by the additional enrollment.

The tenth step was to calculate increases or decreases in institutional revenue resulting from changes in enrollment and changes in tuition. This calculation was done by multiplying the enrollment change by the new tuition level and subtracting both the product of the original enrollment multiplied by the original tuition level and the amount of the new tuition revenue devoted to additional student aid.

The eleventh step was to enter into the computer any proposed changes in direct institutional aid from federal or state governments.

The twelfth step was to calculate the distribution of the additional costs among the major public and private sources of financing based upon their current share of postsecondary education costs.

The remaining calculations to describe the impacts of various financing plans were simple arithmetical calculations. That is, the numbers derived, say, from steps eight, nine, ten, and twelve have to be arrayed--by percents or absolute numbers--in a way that is best suited to a policy maker's needs.

Conducting the analysis and arraying the information in formats useful to the decision makers.*

In the course of its analytical work, the Commission studied several dozen alternative plans for the financing of postsecondary education. From these, it finally selected eight to be described and analyzed in its report. These eight were selected on the basis of two requirements. The first requirement was that the plans should represent a range of policy choices extending from (a) plans that would allocate nearly all public support to institutions to (b) plans that would allocate nearly all public support to the students. The second requirement was that the plans should represent a range of judgments about who benefits from education. At one extreme, on the assumption that the individual is the primary beneficiary of his or her education, were plans that require students (and their families) to bear all or nearly all the cost of their instruction. At the other extreme, on the assumption that society is the primary beneficiary of an educated citizenry, were plans that, by eliminating tuition at public institutions, fully finance the costs of instruction from public revenues.

Although only eight alternative plans were described, the Commission's staff, in consultation with members of the Commission and others, used the analytical model to examine in detail more than fifty

*Quoted from the report of the National Commission on the Financing of Postsecondary Education, page 259.

possible alternatives. From among these many alternatives, eight were selected that, in the opinion of the Commission, best exemplified the ranges described above.

In arraying and analyzing these various alternative financing plans, the Commission neither advocated a particular alternative nor suggested that these eight alternatives were to be preferred over the many other alternatives that might have been analyzed.

Each of the plans was examined from two different perspectives. They were examined first from the perspective of the level of finance recommended for each plan by its advocates. Second, each plan again was analyzed but at a level of financing common to all plans, that is, the plans were constrained by the level of financing in order to see whether it was the level of financing that caused the major changes of impact on the objectives or whether it was the financing mechanism that caused the impact.

After all steps of the analytical model were completed for each of the eight alternative financing plans selected to be included in the Commission's report, the Commission arrayed the data, arranging the numbers sometimes in absolute, sometimes in percentages, to show the estimated impacts the alternative financing plans would have on certain post-secondary education objectives. Since the model operates in a comparative mode in the analysis of alternative plans, the respective differences in attainment of objectives are more important than the absolute projection

of what would happen in the case of implementing any particular plan. Thus, concern for total cost is less important than to note that Plan A would cost about 4 billion dollars less than Plan B and 2 billion dollars less than Plan C. The accuracy of the total overall cost depends not only on the assumptions used in the analytical model but also on the projection of current data forward into the future.

Nevertheless, while this relative comparative mode for analyzing alternatives is useful to those who frequently deal in this kind of analysis, it is difficult for policy makers to use. Thus, in presenting the information in the Commission's report, the projections of impact by each of the alternative financing plans were compared with extrapolations to 1977 and 1980 of the 1972 financing patterns, levels, and trends (as described in Chapter 3 of the Commission's report). The extrapolated figures are based on the assumption the 1972 patterns of financing and enrollment will continue through 1980. They were corrected only for inflation and by the enrollment projections used by the Commission. These extrapolations are used as reference points for measuring the impact on objectives of the alternative financing plans.

WHAT WERE THE RESULTS?

At least three important things have been learned:

The lack of politically acceptable measures of objective achievement can negate the usefulness of the best analysis.

Because measures politically acceptable were available for two of the Commission's objectives--student access and shared responsibility for financing postsecondary education--the analytical model produced acceptable results. While the results were less acceptable for two other objectives--student choice and student opportunity--they were worthy of consideration. And, as already indicated, on the supply side dealing with institutional diversity, educational excellence, institutional independence, and institutional accountability the model was not able to produce quantifiable results for lack of politically acceptable measures.

> Such analysis can produce financing policy generalizations that are valuable to decision makers in formulating policies.

The Commission's extensive analytical work made possible several generalizations about financing postsecondary education that are of particular significance to the evaluation of financing policies. An understanding of these analytical results enables policy makers to anticipate the probable consequences of financing decisions. This understanding also will help policy makers select for further analysis those plans most likely to achieve the objectives they wish to pursue. Had the model been able to handle the other objectives in the same manner as student access and shared responsibility, other similar generalizations might have been available.

The five generalizations yielded by the Commission were concerned with:

1. targeted student assistance compared with general student assistance,

2. the effect of tuition changes on enrollment,
3. the differential impact of increases of student grants,
4. the effect of changes in the maximum income allowed for student grant eligibility, and
5. the level of institutional aid necessary to supplement student grant funds.

As a result of the limited data available these generalizations pertained to student enrollment responses to changes in financing policies. When appropriate data become available, generalizations about both institutional response and the interrelationship among financing sources should be possible. For a more complete description of the five generalizations developed, refer to Chapter 7 of the report of the National Commission.

The use of such a computerized analysis technique permits the researcher to try a policy against objectives and through successive iterations to modify the policy to achieve the objectives in a more desirable fashion. For example, Plan D was developed as a result of several successive iterations of the model in which the developers tinkered with the various financing mechanisms until a satisfactory result was found. Because of the complexities of financing arrangements it is likely that without the aid of such an analytical device such tinkerings could not be done so effectively.

WHAT WOULD WE LIKE IN THE FUTURE?

From a policy point of view, research on the development of these policy analysis approaches must give priority attention to:

- Developing politically acceptable and technically usable measures of objectives for postsecondary education. A good starting point would be measures for the national objectives for postsecondary education developed by the Commission.

- Developing analytical models that allow us to examine questions of supply and demand and that can take into account regional differences.

- Longitudinal studies of institutional, student, and funder behavior designed to provide data to support the necessary assumptions to be used in such analysis (microeconomic/behavior analysis).

- Information standards and their use to make data more compatible and thus susceptible to linking for various analytical purposes.

- Security precautions to ensure the confidentiality of data about individuals and other data determined to be confidential.

- Developing a core of indicators for postsecondary education, such as indicators of financial health, that can be used to describe the status of the enterprise over time.

- Developing practical means to determine priorities among competing objectives in a politically difficult environment.

I believe the effort on the part of the National Commission to take a rigorous analysis approach to its charge has produced two favorable overall results. First, it has produced some useful information to help

policy makers with financing decisions that must be made in the very near future. Second, it has shown that rigorous analysis, even in this primitive state of development, can produce some light at the end of the tunnel, thus promoting confidence that with appropriate research efforts and the mounting of appropriate data in support of these analytical approaches significant improvements can be made in the quality and quantity of information brought to bear on various policy issues in postsecondary education.

POTENTIAL DEFINITIONS OF POSTSECONDARY EDUCATION—AND THEIR IMPLICATIONS

by

Richard Millard

Dr. Millard is the Director of Higher Education Services at the Education Commission of the States. Before joining the Commission in 1969, Dr. Millard was Massachusetts' Chancellor of Higher Education. Prior to that he was Dean of the College of Liberal Arts of Boston University.

Most of the components of what we now call postsecondary education regardless of how we define it so long as it includes more than traditional collegiate institutions have been around for a long time.

So-called noncollegiate post-high school institutions and programs have been the subject of a series of studies--from the President's Commission on Education Beyond the High School in 1957, which called attention to the fact that "we have become a society of students,"[1] to a series of studies in the states.[2] At least since the middle '40s it has been possible to use federal student support in a wide variety of non-traditional collegiate post-high school educational settings. The G.I. Bill made it possible for veterans to use federal funds not only at public and private colleges and universities, but also in special interest programs and apprenticeship training. Further, the Veterans Administration did not rely on accreditation of institutions and programs as a means of determining eligibility for veterans' attendance, but set up its own system for determining eligibility of multiple programs--a system, regardless of how well it does or does not work, that is still very much alive in every state. It is perhaps a little surprising that the more

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[1]The President's Commission on Education Beyond the High School, Second Report to the President. Washington: U.S. Government Printing Office, July 1957, p. 1.

[2]James Nickerson, Citizens' Reports and Recommendations. Interim Study of Education. Washington State Legislature, Seattle, Washington: University of Washington Press.

traditional academic community did not take clearer notice of this feature of the G.I. Bill at the time, or since, as perhaps being a portent of things to come.

If, then, the parts were substantially there, and federal funds had been used to support students in other than collegiate forms of postsecondary education for a good many years, one has to ask why the congressional emphasis in the Education Amendments of 1972 on the range of postsecondary education created problems of definition, exposed major gaps in information, and raised and continues to raise concern, even consternation, in some educational planning and academic circles. In some respects the answer is not hard to suggest. We have tended to identify education in this country, or the American educational system, with "schooling" or "formal learning" with our schools and colleges and their relevant administrative units.

Schooling beyond the high school has been the province of the colleges and universities. Until relatively recently the ideal held out for most young people with ambition or with ambitious parents has been "going to college." This has been reflected in high school through placing prime emphasis on "college preparatory programs" with the vocational and general education programs delegated to second-class status for those students who could not quite make it. On the postsecondary education level we tended to be dimly aware that noncollegiate programs existed, but these for many tended to be the schools that advertised in the yellow pages and engaged in what we called "training" rather than "education."

The same euphemism took care of the in-service education programs of business and industry and the wide number of programs mentioned in the report of the National Commission on the Financing of Postsecondary Education operated by labor unions, civic organizations, professional associations, and other groups.[3] We tended to distinguish rather sharply between the adult and continuing education carried on by colleges and universities for credit and the wide range of community centers and other organizations, including high schools that made non-credit offerings available to people of all ages who were interested in them. Correspondence courses related to ads in the back of Popular Mechanics or throwaways on subways. Even the community colleges were not welcomed into the higher educational "system" without considerable concern about what was happening to the quality of education in this country by more than a few faculty members and administrators in senior institutions.

This tendency to identify the educational system with schools in elementary-secondary education and colleges and universities in postsecondary education, while it has chinks in it, persists, as Michael Marien of the Educational Policy Research Center at Syracuse has pointed out in an unpublished article,[4] due to two highly questionable assumptions and

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[3] Financing Postsecondary Education in the United States, The National Commission on the Financing of Postsecondary Education, U.S. Government Printing Office, Washington, D.C., 1974. p. 18.

[4] Michael Marien, "Alternative Futures for the American Educational System," unpublished article, September 1972.

three continuing conditions. The first assumption is that education, defined as societally valued learning, is primarily for the young, and the second assumption is that such learning takes place only or primarily in schools and colleges. While both of these assumptions may be wrong, they tend to persist, and persist in part because of the three conditions. The first condition is credentialism. We, including the business and industrial community, still seem pretty well convinced that the learning that really counts is the learning that leads to a high school diploma or a college degree and that it is amassed in Carnegie units or credits. The second condition is habit. Even the U.S. Office of Education has reinforced this habit until relatively recently by the kinds of data it gathers. The habit is so sufficiently persistent that it is extraordinarily difficult for educators and others, including parents and students, to break out of it and when they do it is by extension in comparable units rather than by reformulating the framework or the conceptual design for thinking about education.

A third condition that might be added is self-interest in the preservation of the current system as is. The Yale faculty in 1828 decided to preserve the curriculum as it was then for all time against inroads in such unseemly subjects as modern languages and natural sciences. In the early decades of this century the traditionalists in secondary education argued that vocational education or training for vocations was not a legitimate part of a formal educational institution [5] As a result vocational

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[5] Louis W. Bender, Articulation of Secondary and Postsecondary Occupational Programs, ERIC Clearinghouse for Vocational and Technical Education, The Ohio State University, Columbus, Ohio. 1973. p. 9.

education tended to end up in separate trade or vocational high schools. While secondary and postsecondary vocational schools have been admitted to the system through increasing federal and state support ever since the Smith-Hughes Act of 1917, their inclusion has been an uneasy one and John Dewey's admonition in 1915 still has not been realized: "The democracy which proclaims equality of opportunity as its ideal requires an education in which learning and social application, ideas, practices, work and recognition of the meaning of what is done, are unified from the beginning for all."[6]

Today, in spite of recognition that the scope of education far exceeds the traditionally defined educational systems by educators as diverse as the group included in the 1970 "Annual Education Review" of the New York Times[7]--James Allen, James J. Gallagher, Martin Meyerson, Clark Kerr, James S. Colman, and Samuel B. Gould--and research scholars such as Bertram Gross, Lyman Glenny, Stanley Moses, and Michael Marien, we have not moved very far in rethinking the scope of education or of postsecondary education and its implications, either for information gathering or for policy development. Thus, it has taken the extension of federal concern in the Education Amendments of 1972 from higher education (1965) to postsecondary education to force reconsideration not only of what we mean by postsecondary education but also in a larger framework to raise the crucial question of what we mean by the educational system.

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[6]John Dewey, Schools for Tomorrow. New York: Alfred A. Knopf, 1915. p. 143.

[7]New York Times, January 12, 1970, pp. 49, 61, 66, 74.

One thing that is clear is that the old conception of the educational system limiting it to schools, colleges, and universities is no longer viable. Unfortunately most of our information gathering and management systems still are geared to the old concept. While the National Center for Higher Education Management Systems has an Ad Hoc Advisory Committee on Noncollegiate Postsecondary Education and is trying to transcend its original scope, its products to date are essentially traditionally collegiate in structure and scope. The National Center for Educational Statistics has added a Directory of Postsecondary Schools with Occupational Programs to its instruments for collecting elementary-secondary school information and its Higher Education General Information Survey. In addition, it is attempting to obtain information that is somewhat simplified but roughly comparable to that obtained from higher education institutions from the institutions in the occupational directory. A schematism for effectively interdigitating the information from these sources has not yet been developed, and, even if it had, the areas left out still may well dwarf the areas included unless one uses a highly restricted definition of postsecondary education.

No sooner had the Education Amendments of 1972 been passed than a number of groups began to try to deal with the problems of definition. Three of the definitions developed call for a special consideration. The first is the definition of the National Commission on the Financing of Postsecondary Education. To deal with any of the issues assigned the Commission by the Congress, even to specify the areas of Commission concern, a

working definition was essential. The Commission began with what might be described as a broad listing: "The Commission...has concluded that postsecondary education consists of four major sectors; a collegiate sector, a noncollegiate sector, a third sector made up of all other postsecondary institutions, and a fourth sector encompassing the vast array of formal and informal learning opportunities offered by agencies and institutions that are not primarily engaged in providing structured educational programs."[8]

The first group obviously includes what has been conceived of as the higher educational system--that is the 2,948 institutions,[9] public and private, offering degree-granting work listed in the U.S. Office of Education Higher Education Directory or responding to U.S. Office of Education surveys--community and junior colleges, four-year and senior institutions, universities, and professional schools enrolling some 9.3 million students in 1972-73. While some areas of information may be sketchy, we know more about this group and can obtain data from these institutions more readily than any other segment of postsecondary education.

Calling the second sector "noncollegiate" may be a misnomer since some of the institutions involved do offer degrees and call themselves colleges. Perhaps a clearer designation for this group would be the nonprofessional

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[8] Op. cit., p. 13.

occupational sector. It includes the 7,016 institutions listed in the Directory of Postsecondary Schools with Occupational Programs.[10] As pointed out by the National Commission on the Financing of Postsecondary Education, these schools are either accredited or are otherwise eligible (Veterans Administration or Social Security) for federal student aid programs. They offer occupational education programs primarily for students concerned with employment in specific trades or industries. The majority of them (5,019) are under proprietary forms of governance. The information available in regard to them is at least to date considerably more limited than is the case with collegiate institutions. Even the number of students involved is not clear. The Commission estimates 1.6 million students in 1972, but others, including Stanley Moses, have estimated their number to be as high as 9.6 million,[11] although this estimate may include the third group.

The third sector is made up of "other postsecondary institutions."[12] This includes the range of schools not eligible for federal student aid. These are schools concerned with everything from foreign languages, professional modeling, and real estate to skiing, swimming, mountain climbing, and how to become a croupier. The Commission estimates that there may be 3,500 of these institutions but, since there is no comprehensive listing of these, the 3,500 at this point is guess work. Other types of data including enrollments are missing altogether.

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[10] National Center for Educational Statistics, Washington, D.C., 1973.

[11] Harold L. Hodgkinson, Institutions in Transition, The Carnegie Commission on Higher Education. New York: McGraw-Hill Book Company. p. 6.

[12] Op. cit., pp. 17-18.

The fourth category is "other learning opportunities" and includes any "formal or informal learning opportunities offered by such organizations and groups as churches, libraries, museums, art galleries, labor unions, professional associations and chambers of commerce throughout the nation."[13] This is undoubtedly by far the largest category both in terms of numbers of citizen/students of various ages and number of agencies or institutions involved. Our information in regard to it is extremely limited. Not only is there no listing of such opportunities, but also how one would, if one could, go about getting such a listing is not clear at this point. The numbers involved, not including inservice education in business and industry, have been estimated in a study done for the Commission on Nontraditional Study on a sampling technique basis of 18- to 60-year-olds throughout the nation. The study estimate turns out to be in the magnitude of 32.1 million persons. If we are to obtain anything like an adequate picture of the scope of postsecondary education and its impact in this country, the postsecondary financing commission's categories three and four need careful attention now. Some means of developing a more accurate estimate of institutions, agencies, and people involved is crucial.

The final working definition adopted by the National Commission on the Financing of Postsecondary Education is considerably narrower than the four categories. In fact it embraces only the first two, thereby excluding far more students, institutions, and agencies than it includes. The definition reads as follows:

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[13] Ibid., p. 18.

> Postsecondary education consists of formal instruction, research, public service and other learning opportunities offered by educational institutions that primarily serve persons who have completed secondary education or who are beyond the compulsory school attendance age and that are accredited by agencies officially recognized for that purpose by the U.S. Office of Education or are otherwise eligible to participate in federal programs.[14]

This restrictive definition may well have served the functions of the Commission by limiting the field to areas where there is at least some reasonable possibility of collecting data at the present time and to types of institutions where under present law students may take or receive federal student aid. In other words, it provided a reasonable base for information collection and analysis given the short life of the Commission and the specific tasks it was mandated to carry out.

However, any definition of postsecondary education that excludes in excess of 32 million students, approximately three times as many as those included (10.9 million), hardly can be considered adequate either descriptively or normatively in relation to any comprehensive analysis of the range of postsecondary education and its delivery systems.

Admittedly, when one moves beyond this definition the problems of information gathering and analysis become rapidly more complex and difficult, perhaps, given present limited frames of reference, in some cases close to unsolvable. This may well call for a new frame of reference or paradigm for dealing with postsecondary education. In effect, however, the National Commission definition is simply an extension of the classical conception of postsecondary education from colleges

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[14] Ibid., p. 20

and universities to a wider group of institutions which, while somewhat different in scope of subject matter and forms of governance, are on the whole modeled after the classic forms in terms of credits, hours, classes, credentials, and so forth. This makes for neatness, solution of information problems, and potential accuracy, but at the cost of an arbitrarily restricted universe excluding institutions, activities, and movements that may in the long run have major impact on that restricted universe itself.

The second and third definitions are substantially identical to each other. They were in fact worked out conjointly by the Federal Interagency Committee on Education and an Education Commission of the States's Task Force on Model State Legislation for Approval of Postsecondary Educational Institutions and Authorization to Grant Degrees. They differ only in the first few words, partly in the light of purposes for which the different definitions were to be used. Unlike the National Commission definition, instead of attempting to define postsecondary education, both statements define postsecondary educational institutions. The Federal Interagency Committee on Education definition is as follows:

> A postsecondary educational institution is defined as an academic, vocational, technical, home study, business, professional, or other school, college or university, or other organization or person offering educational credentials or offering instruction or educational services (primarily to persons who have completed or terminated their secondary education or who are beyond the age of compulsory school attendance) for attainment of educational, professional or vocational objectives.[15]

The definition of the Education Commission of the States's Task Force differs in the opening wording as follows:

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[15]Unpublished staff document, dated May 23, 1973.

"Postsecondary education institutions" includes, but is not limited to, an academic...[16]

Both definitions have the advantage of including all four sectors recognized by the National Commission on the Financing of Postsecondary Education on an equal and not derivative basis. If anything, the Task Force definition is the broader of the two by virtue of the "includes, but is not limited to" related to the types of institutions listed. In developing these, in effect, common definitions, the participants in the discussion were concerned with a series of issues. First, while an "institution" must be at least a temporarily identifiable entity, it should not be restricted to a particular form of organization, management, or structure. The definitions thus move by inclusion rather than exclusion. Second, the range of activities of such institutions varies so that it is no longer possible to define an educational institution as one that offers instruction. Its primary function may be credentialing as in the case of the external degree program by the New York Board of Regents. It may primarily offer certain types of educational support services where in fact the student provides his own instruction. Or it may offer any combination of these. Third, these offerings can be identified in terms of educational, professional, or vocational objectives. Insofar as these are offered or made available to persons who have completed or terminated high school or are of postcompulsory school age, they are postsecondary in character.

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[16] Model State Legislation, Report of the Task Force on Model State Legislation for Approval of Postsecondary Educational Institutions and Authorization to Grant Degrees. Education Commission of the States. Report #39, 1973. pp. 2-3.

Using the National Commission's concept of sectors, we already have indicated the major difficulties from the standpoint of information gathering and analysis in any definition as broad as the Federal Interagency Committee on Education/Education Commission of the States's Task Force definitions. Yet the fact that information is not now readily available is neither an indication of the nonexistence of these sectors nor of the lack of importance of attempting to take them into account. It would seem to me that at this juncture in postsecondary education in this country, anything less broad than the FICE/ECS definition not only is inaccurate but also is misleading in terms of the issues and problems facing us in the period ahead. The very fact that much of the information is not available should underline the need for developing not only an analytic framework but also the procedures for obtaining the information.

There are a number of factors that underline the need for moving more quickly in this direction. First, the traditional higher educational system is in trouble. Enrollment projections of traditional college-age students (18- to 21-year-olds) show a downtrend from now until the end of the century. Percentages of that age group going on to college already have leveled off.[17] Percentages of state revenue going into higher education have leveled off and may in fact drop.[18] The colleges continue to operate with a credibility gap as far as the political community is

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[17] Lyman Glenny, "The '60s in Reverse," The Research Reporter. Center for Research and Development in Higher Education. University of California, Berkeley. Volume VIII, Number 3, 1973. p. 1.

[18] Lyman A. Glenny and James R. Kidder, State Tax Support of Higher Education: Revenue Appropriation Trends and Patterns, 1963-1973. Center for Research and Development in Higher Education. University of California, Berkeley.

concerned, in spite of continuing emphasis on accountability and efforts of institutions to meet the accountability demands.

Second, even in attempting to plan for public higher education on statewide levels, it has become progressively clearer that such planning cannot be done in a vacuum or for certain segments of institutions alone. If the planning is to be at all adequate now, even for public institutions, it must take into account the other segments of postsecondary education, trends within them, and means of interchange among them. It would seem clear that we have passed not only the day when one institution can be all things to all people but also the day when one limited system of postsecondary education can be all things to all people.

Third, the emphasis on innovation and the rapid development and further encouragement of so-called nontraditional postsecondary education, what Michael Marien[19] perhaps more accurately describes as space/time preference higher learning, already is creating bridges between the first three and the fourth sector of postsecondary education as defined by the National Commission on the Financing of Postsecondary Education, that is, the vast array of formal and informal learning opportunities. This is not to say that the more traditional higher educational institutions or their time-defined programs will disappear, but it is to suggest that the growing edge of postsecondary education is likely to be in a mid-ground in which concepts of credits and hours and two and four years

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[19] Op. cit., p. 14.

will be less and less pertinent. It also may mean that the day of the traditional campus as the primary center of learning for many students is waning. Off-campus programs, external degrees, and evaluation of noncollegiate experience through proficiency examinations show promise of opening up postsecondary educational opportunity for many persons formerly excluded and of reinforcing the bridge to the fourth group. The campuses themselves are likely to become more logistical bases for education than places for resident students.

Fourth, the growing concern for lifelong learning in all its variety of forms, and the search for some continuity in its forms whether these be in connection with nontraditional educational institutions, through business or civic organizations, by correspondence, or through improved technologies--television, cassettes, or what have you--further underline the linkages among the various segments and the probability that many persons of all ages will move back and forth among them. As such concern and involvement increase, keeping the old forms of academic counters and credits will prove less and less viable. Again, planning will have to deal with at least some aspects of the total postsecondary educational universe. Even that universe may be too confining and will have to be linked into the total educational universe with elementary-secondary education so that arbitrary dividing lines between elementary-secondary and postsecondary education disappear.

Fifth, and growing out of the third and fourth, is the growing recognition and use of achievement and competency base measures of educational progress. The growth of CLEP in the last few years and the development of external degree examinations are cases in point. Beyond these lie the development

of means of assessing skill competencies and attitudinal changes. Linked to this is the large number of persons of all ages who are involved in programs in community agencies, inservice education, and union programs, not for credit but to improve their competencies and enrich their lives. This is not likely to undermine wholly the credentialing system, as is sometimes urged, but to change it, to move education in the direction of relating credentials far more directly to accomplishments, competencies, and achievements rather than to hours put in. Here again the walls between the sectors may be breaking down.

All of this points to the necessity for a definition of postsecondary education at least as broad as the FICE/ECS definition, but it may point even more strongly to something else--that is, the serious need for rethinking the paradigm of postsecondary education, even for abandoning the old paradigm of the colleges and universities. The tendency to date has been to use the old paradigm and amend it by extension. This may in fact be a basic part of our trouble in information or data gathering and interpretation. To the colleges and universities we have added, in the terms of the National Commission, the "noncollegiate sector" or the nonprofessional occupational schools. Because there are certain parallels we have attempted to extend the data elements from the collegiate to the noncollegiate area with slight modifications. This has worked, is working, or will work in part or within limits. It might even work with the third area of "all other postsecondary institutions" but it will be more difficult, and I would suggest it is likely to be less than satisfactory, in developing a real understanding of what in fact happens in

these institutions. The possibility of further extension to the fourth area of formal or informal learning opportunities seems very low without so warping the framework as to make it inoperable in the first sector, or of so warping the fourth area to a procrustean bed it does not fit, that the results do not make sense.

If this is the case, would it not be more reasonable to start over? This does not mean abandoning the tools or instruments for data collection and interpretation that work in restricted areas, but it does mean supplying a new and broader framework into which they fit for the sector to which they apply, with adequate translation tables into the larger model. Such models have been suggested, including the American Learning Force model of Stanley Moses.[20] Moses divides the learning force into the educational core and the educational periphery. Educational core looks very much like the old school-college-university model with organizational, proprietary, correspondence, and other forms making up the periphery. This may be a valid division, but at least for the present I would like to hold it in abeyance and stay within the range of postsecondary education.

One possible approach would be to use as the paradigm the universe of postsecondary education itself. This universe might roughly be determined by the FICE/ECS definition. It would be the inclusive circle in the report of the National Commission on the Financing of Postsecondary Education.

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[20] Stanley Moses, The Learning Force: A More Comprehensive Framework for Educational Policy. Syracuse: Syracuse University Publications in Continuing Education, Occasional Paper No. 25, October 1971.

The first question would be "what are the common characteristics of all activities and endeavors within the universe or circle?" Such a question is at least in theory capable of being answered. If one were to answer it by saying that it includes all organized or structured individual or group activities for persons beyond compulsory school age or graduates of high schools, designed to improve or expand individual or group knowledge, competencies, and levels of achievement, it then becomes an identifiable universe. Further, it provides a basis for comparison and differentiation of sectors or complexes within the universe based on how these activities are carried out and how tangible results are assessed.

While I have no particular brief either for the answer or for the mode of differentiation, it does have certain advantages. It would make it possible to ask relevant questions to particular types of institutions and activities and to compare the results at appropriate levels of aggregation or generalization, given translation instruments based on those levels. This, at least in theory, would make it possible to deal with inservice industrial and business programs in terms of data elements or categories appropriate to them, community center programs in terms of elements appropriate to them, individualized learning programs with unique components and time frames appropriate to them, and the same with correspondence programs, external degree programs, specific occupational programs, and traditional colleges' and universities' programs. Instead of working laterally and attempting to adapt college and university structures to other noncomparable programs, one could develop the indigenous characteristics of various programs and apply comparative criteria only at appropriate levels of generalization.

With such an approach I am reasonably sure that it would be possible to develop effective data bases, not only in the first two categories or segments of the National Commission report but also in much of the third and fourth segments as well. However, I am fairly certain that there would be considerably more than four segments. Such a system would allow the flexibility in approach which would also make it possible to find real, rather than artificial, points of junction and bases of comparison as well as significant differences. Further, it might provide a framework for planning on institutional, state, and national levels which encourages and protects the diversity and uniqueness of multiple institutions and programs. Through the development of differences as well as similarities it might well encourage closer complementation of efforts among institutions and programs in meeting the diverse postsecondary educational needs of the states and the nation.

It would recognize that the system of postsecondary education, while more than the sum of its parts, is dependent on the uniqueness of its parts and their applicability to citizens of all ages and all conditions in life. Even in the difficult area of costs it might give a far better picture not only of the range of cost differentials but also of the reasons for them. One of the end results might even be new insight into what constitutes relevant information from traditional colleges and universities.

RESPONSE

by

William Fowler

Mr. Fowler is Executive Director of the National Home Study Council, a position he has held since 1972. Prior to joining the staff of the National Home Study Council in 1961, Mr. Fowler was Chief of the Audio-Visual Aids Division, Quartermaster Training Command, Fort Lee, Virginia.

When Richard Millard asks, "Would it not be more reasonable to start over?," I answer, "Yes, it would." If a proper definition of postsecondary education is to be written, I believe it would be better to start over. Any definition developed by tinkering with existing definitions and trying to patch the pieces toegether would most likely still fall short of the desirable goal because some of the important pieces are missing.

And I am not too sure that the group assembled for this Seminar has what it would take to write the proper definition. We are much like the groups which have already worked to develop the definitions of postsecondary education presented by Dr. Millard. While we do have accepted and acceptable qualifications, we each bring our own prejudice based on our backgrounds and experience. There are few of us who do not have some vested interest to preserve. I am afraid that, strive as we

would to be objective and understanding, it may be beyond our capabilities, without additional input, to write the definition of postsecondary education that would best serve the overall needs of our society.

Many of you have probably read the article "Jury Duty--The Inalienable Burden" in the May issue of Mainliner, the United Air Lines Magazine. I quote from this article to help explain what I mean. "...however conscientiously the (Jury) selectors might strive to choose a cross-section of the population, such choice of persons inevitably proves out to reflect the characteristics of those doing the selecting."

Dr. Millard has provided good insight into the breadth of what we ought to mean when we use the term postsecondary education, and I suggest that it will take more "characteristics" than this--or probably any--group of educators alone can provide to write the proper definition. I agree with him when he says that habit will make it extremely difficult to reformulate the framework or the conceptual design for thinking about education.

Whether a new start is made or a definition is developed from those already in existence, I would like to review some elements that I believe should be given consideration.

1. The definition should be broad, and it should be inclusive. It should permit great latitude in subject matter, content, and scope. It should allow, even

encourage, individual initiative, choice, and mobility both on the part of those who participate in post-secondary experiences and those who offer them.

If more limited definitions are needed to fulfill legislative or other requirements, let specific definitions be prepared for specific purposes. The definition of postsecondary education should not be written just to conform to limiting, and probably transitory, factors that now exist.

2. The definition should place more dependence on the quality of programs (experiences) and the validity of methods in terms of stated and understood objectives--including the objectives or satisfaction of the participant "student." There should be less dependence on "accountability" measured in terms of results which are beyond the reasonable control of those offering or those participating in a postsecondary experience.

   It should encompass competency-based measures of progress and proficiency but at the same time it should not encourage the establishment of unrealistic or unnecessary barriers in the form of regulation or licensing which limit opportunities or discourage initiative.

3. Above all, I believe postsecondary education should be defined as something that is people-oriented. This is an element which is in large part missing from present definitions. These definitions--recent in formulation as they are--seem to be primarily objective-oriented, grade-level-oriented, approval-criteria-oriented, subject-oriented--and institution-oriented. The definition should, of course, take these elements into account, but it should include still more. Even being student-oriented isn't enough because those who ought to be--and often are--involved in the postsecondary education experience may not be "students" in the usual sense of the word. Post-secondary education is, and should be, oriented toward all citizens--all of the people. As Dr. Millard says, applicable "to citizens of all ages and all conditions in life."

Those who participate in postsecondary education in the broad sense are, in the main, individuals who can, ought to, and do make their own decisions and are willing to be responsible for them. A proper definition should recognize this. It would undoubtedly provide a better understanding of what postsecondary education really is. In so doing it would, hopefully, increase awareness of the many and varied opportunities for worthwhile learning experiences in the postsecondary education universe--and encourage more people to avail themselves of these opportunities.

RESPONSE

by

James L. Miller, Jr.

Dr. Miller has been a Professor of Higher Education at the University of Michigan's Center for the Study of Higher Education since 1966. Prior to joining the University of Michigan faculty, Dr. Miller had served as Associate Director of the Southern Regional Education Board and as Executive Secretary of the Kentucky Council on Public Higher Education. He is a past president of the American Association for Higher Education, past Chairman of the Associate of Professors of Higher Education, and currently a member of the NCHEMS Board of Directors.

An important theme suggested by several of Millard's points is the interesting interaction between reality and our perceptions of reality, between the facts of the situation and our frequently quite different wish-fulfilling beliefs, and between the actual evolutionary ways in which change usually occurs and our belief that new developments and new needs spring upon us unexpectedly.

Much of the history of American higher education is the story of the expansion of the curriculum and of the clientle. This expansion has not been a smooth and even process nor has it been a rational one. It has been characterized by resistance from existing colleges and universities until the point is reached at which either the pressures upon existing institutions for change become irresistable or new types of institutions are established to meet the needs. When the dam breaks,

it seems to those in the traditional sector that there is a flood of change. In point of fact, it is a mix of catching up with accumulated needs and the incorporation into the traditional system of educational programs which have developed under other auspices. Incorporation into the traditional system occurs partly through the transfer of functions among institutions and partly through the legitimatization (into the traditional sector) of a new group of institutions. The recognition in the Education Amendments of 1972 of a broader definition of post-secondary education simply represents another stage in this continuing process.

The redefinition of postsecondary education will enable us to recognize openly the degree of overlap which exists between the activities of collegiate institutions and noncollegiate ones. A large number of skill and occupational programs have made their way into the curricula of collegiate institutions, and by the same token the noncollegiate sector has been engaged in activities which have traditional overtones, as for example, the humanities-related cultural enrichment courses which many people take by correspondence.

There are multiple subsectors within both the traditional collegiate sector and the noncollegiate sector. These subsectors have a lot to learn from one another. There is applicability in each subsector of ideas which have had their fullest development in one of the others. The expanded definition of postsecondary education will facilitate the exchange of ideas and experience in ways which potentially will benefit all.

Millard rightly points to the basic dilemma in developing a new definition of postsecondary education. Should it be a definition which is maximally informative and accurate by describing all that logically is encompassed in postsecondary education or should it be a definition which is maximally useful in describing the most readily identifiable portions of postsecondary education--the formal institutions with which we can work relatively easily in terms of identification, communication, collection of longitudinal statistics, and so forth. We would be well advised to recognize the need for at least two definitions of postsecondary education, one of which truly describes it in all its vastness, encompassing learning in its many forms, and the other operationally feasible in serving as a reasonably delimited definition which will enable us to expand our information-gathering about education and foster communication among its component parts. As time passes, the two definitions may come closer together as our ability to identify more and more of the sources of learning expands, but initially the addition of 7,000 noncollegiate institutions to the fewer than 3,000 colleges and universities, which until a few years ago constituted the most generally recognized forms of postsecondary education, will be quite enough to digest.

Millard hopes that the new recognition of the fuller scope of postsecondary education may propel us toward the development of altogether new forms of measurement for educational accomplishment. Such measurement will appropriately be learner-based in the sense that it seeks to measure what has occurred within the learner and what the learner has learned--the real measure of success. This contrasts with our present emphasis upon process-based programmatic measures which focus

on inputs in terms of dollars, faculty, and physical plant and on measurement of outcomes in terms of credits and degrees (rather than learning, per se). The recent redefinition of postsecondary education may indeed give the final push toward such a reworking of our measurement tools, but if it does, it will have been the straw that broke the camel's back rather than the principal cause. There have been cries within the traditional sectors for a very long time for a change in the measurement of educational success to one which is learner-based. If noncollegiate postsecondary education serves as catalyst, it will result in measures which education needed long before the most recent redefinition.

The development of new measures which are learner-based will take time, just as it has taken time to develop measurements which are process-based. We must recognize this fact and not anticipate instant toolkits as soon as there is agreement on the need for them. That is all the more reason to get started now on their development. It also is reason to remind ourselves that for the time being we are stuck with what we have and need to perfect it and make use of it as best we can.

Once new measures of learning have been developed and systematized, what will be their relation to the process-measures which we rely upon today (or, more accurately, which we are still in process of perfecting through a variety of channels, not the least of which has been the work of NCHEMS)? Although some would suggest that the new measures will replace the old,

I think the two will be found to complement one another instead. Knowing more about the learning process and being able to measure the increments of learning which are accumulated by individuals probably will not alter the fact that learning for the majority of people will continue to be facilitated by institutions and organizations. Those institutions and organizations will continue to have inputs of money, faculty, and physical plant and outputs which are registered in terms of some set of common units that recognize the learning or learning-related outcomes. We will continue to need measures of institutional and organizational activity, therefore, even as we begin to make use of the learner-based measures. And we also will need the means for interrelating the two sets of measures so that the inputs and outputs of activities intended to encourage or facilitate learning can be juxtaposed against actual learning processes and outcomes.

The suggestion that the expansion of postsecondary education will serve to expand educational opportunity is an idea which is susceptible to misinterpretation because of the ease with which the many forms of non-traditional education can be thought of as having more in common than actually is the case. Nontraditional education is really an anti-definition: a definition which lumps together those things that have in common the fact they are <u>not</u> part of traditional education. In recent years there has been a lot of interest in the development of various forms of "nontraditional education" <u>within</u> traditional institutions or in association with them. These forms of nontraditional education often have been touted as avenues to expanded access, but it has been my

observation that they serve principally to enhance the flexibility of the educational system in ways that are particularly suited to people who are familiar with the conventional educational system but want to go beyond its limits. In contrast, the noncollegiate institutions which are affected by the redefinition of postsecondary education are non-traditional in quite a different way, and they expand access to educational opportunity in a very different way. They appeal to a different clientele. Equally important, they more often than not serve that clientele in ways which are almost precisely the opposite of many of the nontraditional programs in the traditional sector. Whereas greater program flexibility and student autonomy is the objective of the latter, the noncollegiate institutions frequently succeed in meeting the education needs of students by doing exactly the opposite--by carefully structuring the tasks to be accomplished and subdividing those tasks into small modules which are easily and quickly mastered in order to provide successful learning experiences that will positively motivate students who are not accustomed to successful school experiences.

A final comment: it appears that one topic of our discussion at this seminar is going to be the relative advantages of, or necessity for, choosing between incremental change and starting over periodically with totally new reconceptualizations of the universe and how to deal with it. There are advantages to each approach. I hope we find ways to capitalize on both instead of choosing between them.

THE SUPPLY OF POSTSECONDARY EDUCATION SERVICES: DATA SOURCES, DATA MANAGEMENT PROCEDURES, AND ANALYTICAL TECHNIQUES

by

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INTRODUCTION

Institutions providing educational services and activities beyond the high school level are currently facing several strong forces from a changing society.[1] In fact, the traditional term "higher education" has been replaced by "postsecondary education" to include vocational and technical institutions which also provide educational and training programs beyond the high school level. The financing of postsecondary education in the United States has become a major problem to be confronted in the 1970s. A leveling off of student enrollments coupled with rapidly increasing costs and changing demands on programs and services to be provided has placed tremendous strains on the postsecondary education "industry." In the past, colleges, universities, and other postsecondary education institutions met the problem of financing by simply seeking more revenues. The overall scale of postsecondary education was small; there were always places to obtain additional funds, and words such as productivity, efficiency, and accountability were seldom mentioned. Along with an increased concern for the effective use of resources in postsecondary education, there has been a growing need for quantitative information about the behavior of these institutions.

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[1] The National Commission on the Financing of Postsecondary Education identified fifteen institutional changes that are occurring in response to a changing society. These changes are: enrollment stabilization, the postsecondary student mix, intersegmental enrollment shifts, age of majority, personnel needs, student attitudes, public services, nontraditional education, constraints on new programs, faculty collective bargaining, educational technology, new high school curricula, institutional costs and productivity, federal support for postsecondary education, and trends in state support.

The purposes of this paper are to identify and discuss briefly several of the current needs for data on the supply of postsecondary education services, to discuss several observations concerning the current status and management of this data as a framework for further discussion on possible solutions and strategies, and to discuss briefly the analytical techniques available for extracting useful information from all of these data files. The basic theme of this paper is that our inability to find satisfactory quantitative answers to many policy and management questions concerning the supply of postsecondary education services has not been solely because of a lack of surveys and questionnaires. Rather, this inability has also resulted from a combination of communication, data processing/management, and analytical technique problems.

CURRENT DEMANDS FOR POSTSECONDARY EDUCATION SUPPLY DATA

At the present time, the demand for quantitative information on the activities and behavior of postsecondary education institutions is at a very high level and will most likely increase in the future. In fact, I doubt if many other industries, public or private, service or nonservice, have as much interest and as many resources devoted to the collection, dissemination, and analysis of institutional (or firm) data. There are many reasons for this increasing interest with respect to data on these schools, colleges, and universities. Several of these reasons are listed and discussed below.

(a) Rising Expectations: Having been able to obtain in one form or another a considerable amount of data over the past few years, decision makers at all governmental levels, at institutions, and at various private organizations are now expecting more and more quantitative information as a result of a variety of forces. The sophistication and capabilities of computer systems have increased considerably in recent years in the areas of larger storage capacities, faster data retrieval procedures, more rapid computational speed, and improved hardware and software to support remote, time-sharing capabilities. These computer developments have led decision makers and anlaysts to expect more from data systems in providing rapidly usable information from data surveys. Along with better computer software and hardware, the development of data management techniques has progressed over the years. These developments have made it possible to manipulate very large bases of data efficiently and effectively through on-line computer systems. Again, all of these technological advances have increased the expectations of data users as to the speed, quantity, and quality of data they should be able to obtain.

Another factor leading to rising expectations comes about because of the large investment in time and resources that has been made in data collection, processing, distribution, and analytical efforts. Because of promises of certain data management capabilities that have never materialized, there are currently built-in frustrations for the handling of post-secondary education supply data. Additional surveys of institutions are always being suggested, developed, and undertaken. These new surveys

always lead to increased expectations of more data to be available in the next year or two. As suggested by the theme of this paper, I might comment here that many of us have taken the easy route in response to a request for information by simply stating that a new survey will soon be available instead of trying to extract the information, or at least partial information, from existing data files.

Computational techniques for summarizing and extracting useful information for policy planning and management purposes from raw data are also being improved all of the time. These developments similarly increase the expectations of decision makers and place a further burden on or challenge to the analysts.

(b) Institutional Costing and Data Reporting: As mentioned earlier, productivity, efficiency, and accountability are very popular and frequently used terms in the postsecondary education industry at the current time. Unfortunately, very little quantitative information has been generated in support of these terms to date. However, there are several efforts in progress that will yield comparable data on institutional costs and other characteristics in the near future.[2] These institutional

[2]The National Center for Higher Education Management Systems has two projects, the Cost Finding Principles project and the Information Exchange Procedures project, that are nearing completion. In addition, the National Association of College and University Business Officers is reviewing accounting systems; the American Council on Education is examining the use of institutional resources; and several postsecondary institutions and associations, often with foundation support, are developing, testing, and implementing costing systems and cost analysis.

cost data are certainly one of the high priority needs of quantitative information concerning the supply side of the postsecondary education industry.

(c) Achievement of Objectives: Assessing the achievement of national, state, local, and institutional postsecondary education objectives is another key area that currently requires the analysis of detailed, up-to-date data on postsecondary education institutions.[3] For example, do adequate programs exist throughout the country in certain subject areas? Is the financial responsibility for providing educational services being shared in a desired fashion?

Many specific questions are being asked concerning the accomplishment of objectives and the analysts are going to need an extensive base of data to come up with quantitative information to answer the questions.

(d) Institutional Financial Indicators: A tremendous amount of debate and discussion and several books and articles have centered around the definition, existence, determination, and extent of financial distress in institutions of postsecondary education. One conclusion from all of this discourse has been that we currently do not have the appropriate data and information to answer all of the questions that are being posed

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[3] The National Commission on the Financing of Postsecondary Education listed eight broad objectives that reflected the thoughts of a wide spectrum of educationl policy makers. These objectives are student access, student choice, student opportunity, educational diversity, institutional excellence, institutional independence, institutional accountability, and adequate financial support.

concerning the financial condition of the institutions. Suggestions as to the types of data needed for the construction of indicators to monitor the financial position and viability of postsecondary education institutions have been made.[4]

(e) Effective Use of Resources: The efficient and effective use of public and private resources in the postsecondary education sector another popular topic of concern. Which sectors of the industry should receive what proportion of the resources? Are there ways to redistribute or reorganize resources that will result in more efficient and effective usage? A better understanding of the production process in the education industry, which requires the estimation of behavioral relationships and extensive data, is necessary to answer these questions. Currently, the demand for data in this area is substantial.

(f) Current Impact of Government Programs: Many special federal programs have had extensive studies performed to determine their impact with respect to specific objectives. Many programs, however, have had no evaluation studies and, more importantly, no combined source of data exists on all programs. This deficiency makes the determination of the marginal impact of any single institutional aid or grant program very difficult, if not impossible. Special studies of specific programs often are of limited usefulness since the effects of other programs

[4]See Chapter 5 (written by Hans Jenny) of Financing Postsecondary Education in the United States, U.S. Government Printing Office, December 1973.

cannot be controlled. Given the large number of federal programs, not to mention state, local, and private programs, there is a crucial need for more comprehensive, accessible data on the distribution of resources to postsecondary education institutions from all government sources.

(g) Future Impacts of Institutional Aid Plans: Another area of need for data on the behavior and characteristics of postsecondary education institutions is for the purpose of estimating the potential or most likely impacts of proposed institutional aid programs. How will the money be distributed, which institutional sectors will gain the most relative to others, are all sectors treated equally? Since estimation or extrapolation will be needed to assess future impacts, a quite extensive base of data is usually required for this purpose. A good illustration of the amount of data required for a detailed model of the postsecondary education industry is given by the current effort of the National Center for Higher Education Management Systems.[5]

(h) Revenue Analysis: Institutions of postsecondary education receive their revenues from a large and diverse number of sources. Very little attention has been paid to possible interactions between these alternative sources. Ideally we should have detailed data on each and every source of revenue. An illustration of the complexity of the

[5]See the paper by Vaughn Huckfeldt, "Preliminary Data for A Federal Planning Model for Analysis of Accessibility to Higher Education", National Center for Higher Education Management Systems, 1973.

revenue structure for postsecondary education institutions is given in the recent study of June O'Neill.[6] More emphasis on institutional revenue structures is very likely in the future.

OBSERVATIONS ON POSTSECONDARY EDUCATION SUPPLY DATA SOURCES AND DATA MANAGEMENT TECHNIQUES

Given the eight general forces discussed above plus many other factors that I am sure others might suggest, it is apparent that the demand for quantitative information on the behavior and activities of postsecondary education institutions is going to remain strong. Several observations can be made at this point to describe the situation with respect to current and proposed postsecondary education institutional data sources and also current data management techniques. Also, these observations will hopefully provide a structure, or at least a starting point, for further discussion of the data practices concerning the supply of postsecondary education services. These observations will be listed and discussed below from the point of view of a researcher or an analyst faced with the task of extracting information useful to postsecondary education decision makers from the existing and proposed bases of data on the supply of postsecondary education services.

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[6] J. A. O'Neill and D. Sullivan, Sources of Funds to Colleges and Universities, McGraw-Hill, 1973

(a) The Industry is Expanding: Due to the change in scope and terminology from "higher education" to "postsecondary education," the number of institutions has taken a big jump. In 1972, the postsecondary education sector included approximately 10,000 institutions with only 3,000 of these, or 30 percent, being included in the traditional higher education sector. The distribution of institutions by type and control is given in Chart 1. Along with the increased number of institutions, the diversity of behavior and activities exhibited by these institutions is also much greater. In addition to the traditional public/private categorization, we now have to add various types of profit-oriented schools. In a sense, for 70 percent of the institutions we are back in the early 1960s with respect to data availability for the higher education component. Fortunately, efforts are currently being taken to close this information gap.[7] However, the problem still remains that the base of data for the postsecondary education institutions will be an order of magnitude larger than under the "higher education" definition. This change in the industry definition will certainly place additional strains on data collection and data management procedures.

In addition to a larger number of institutions, the number and diversity of programs being offerred at the institutions will most likely increase in response to society's changing values with respect to postsecondary

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[7] The National Center for Educational Statistics is currently updating its Directory of Postsecondary Schools and conducting a survey of Programs and Enrollments in Noncollegiate Postsecondary Schools. This latter survey will involve a national sample of 5,000 institutions.

Chart 1: The Postsecondary Education Industry
Numbers of Institutions

Collegiate Sector*

	Public	Private	Total
Research universities	56	38	94
Doctoral-granting univ.	45	26	71
Comprehensive colleges	328	149	477
Liberal arts colleges	32	681	713
Two-year colleges	882	251	1,133
Specialized institutions	67	393	460
TOTAL	1,410	1,538	2,948

*Only those institutions accredited by an agency recognized by U.S. Office of Education.

Noncollegiate Sector**

	Public	Proprietary	Nonprofit	Sectarian	Total
Technical/Vocational	560	423	40	4	1,027
Technical Institutes	122	161	23	0	306
Business/Commercial	5	940	20	2	967
Cosmetology	4	1,475	2	0	1,481
Flight Schools	3	1,332	10	0	1,345
Trade Schools	54	509	34	0	597
Correspondence	0	112	1	1	114
Hospital Schools	118	47	681	288	2,134
Other	15	20	10	0	45
TOTAL	881	5,019	821	295	7,016

**Only those institutions with some form of Federal recognition or approval.

education. The traditional four-year programs in engineering and the fine arts will be supplemented with a variety of time frames and new programs. The range of and the average age groups attending post-secondary education institutions are increasing and forcing new flexibilities into the programs. All of these forces tend to increase the diversity of the behavior and activities of the institutions and to make simple categorizations and generalizations of behavior more difficult. This fact makes detailed data availability even more important and also makes it more difficult to standardize formats and procedures.

(b) The Availability of Data: The existence and availability of many large data files are generally not known by postsecondary education researchers and analysts. Many governmental and private agencies conduct extensive surveys of postsecondary education institutions in order to obtain data specific to their needs and requirements. Few of these data files are published in complete form for each institution, some are published in summary form, and many are only used internally. Although these data are often collected for specific purposes, the data usually have a much broader potential usage, especially when combined with other data sources. Since most of these files are quite large, they are usually computerized and could be utilized by other individuals or organizations quite easily. The many problems associated with the transferral procedure will be discussed in detail later.

To illustrate the massive base of data that currently exists on post-secondary education institutions from many sources, Chart 2 presents

Chart 2: Postsecondary Education Institutional Data Files

	Agency-Survey	Type	Description
(1)	National Center for Educational Statistics - Higher Education General Information Surveys	Total - higher education	Enrollment, finance, earned degrees, enrollment for advanced degrees, employees, physical facilities
(2)	College Entrance Examination Board - College Locator Service	Subset - higher education	Special programs and activities, student activities and organizations, applicants and acceptances, financial need of students, scholastic ability, test scores, aid programs
(3)	American Council on Education	Total - higher education	Test scores, library information, student financial aid, degrees granted
(4)	Office of Education - Developing Institutions	Subset - higher education	Finance, employee characteristics, library data; ability, race, income, and financial aid characteristics of students
(5)	National Science Foundation	Subset - higher education	Research funding by source, program and cost data for separately budgeted research and development
(6)	Office of Civil Rights	Total - higher education	Enrollment by ethnic group and level of participation
(7)	Census of Governments	Subset - higher education	Detailed sources of revenue for community college districts
(8)	National Center for Educational Statistics - Vocational Education Directory Survey	Total - Non-collegiate sector	Enrollment, program accreditation, programs offerred, special programs and services
(9)	Council for Financial Aid to Education - Voluntary Support Survey	Subset - higher education	Matrix of voluntary support sources (corporations, religious organizations, alumni) by uses of the funds (faculty compensation, research, student aid)
(10)	National Center for Higher Education Management Systems - Information Exchange Procedures	Sample - higher education	Enrollment and degree distributions by instructional programs, costs per credit hour by discipline and by instructional program, faculty/credit hour ratios, and institutional direct expenditures by function

(11) Office of Education - Student Aid Programs	Total - higher education	Number and characteristics of students aided by each program, dollars given through each program
(12) Carnegie Commission - Career School Survey	Subset - Non-collegiate sector	Student characteristics, faculty characteristics, revenue and expenditure breakdowns, programs offerred, student charges
(13) National Commission on the Financing of Postsecondary Education - Survey of Postsecondary Career Schools	Sample - Non-collegiate sector	Institutional finance and staff, student characteristics and financial aid, program characteristics
(14) Federal Trade Commission-Noncollegiate Institutional Records	Subset - Non-collegiate sector	Institutional characteristics and total revenues; enrollments, completion rates, and tuitions by program
(15) American Association of University Professors - Annual Survey of Academic Salary and Fringe Benefit Data	Subset - higher education	Faculty salaries and benefits by academic rank; number of faculty by rank; faculty turnover by rank
(16) Jack Gourman - Ratings of American Colleges	Subset - higher education	Accreditation, student aid, faculty attitudes, institutional characteristics (used to construct a "quality" index)
(17) National Science Foundation - Surveys of Graduate Student Support	Subset - higher education	Coverage by academic department in physical, biological, and social sciences of the principal form of graduate student support (including self support)
(18) National Research Council Doctorate Records File	Subset - higher education	Data on all U.S. Ph.D. recipients, including undergraduate origins, field of dissertation, first job accepted
(19) Association of Independent California Colleges and Universities	Subset - higher education	Enrollments, finance financial aid awards and dollars from all state and federal programs, average faculty salaries, employee counts

(20) Peter M. Blau's study of institutional organization	Subset - higher education	Interviews with administrators, finance, enrollment, degrees, faculty survey data
(21) Illinois Community College Board	Subset - higher education	Enrollment, degrees, characteristics, finance

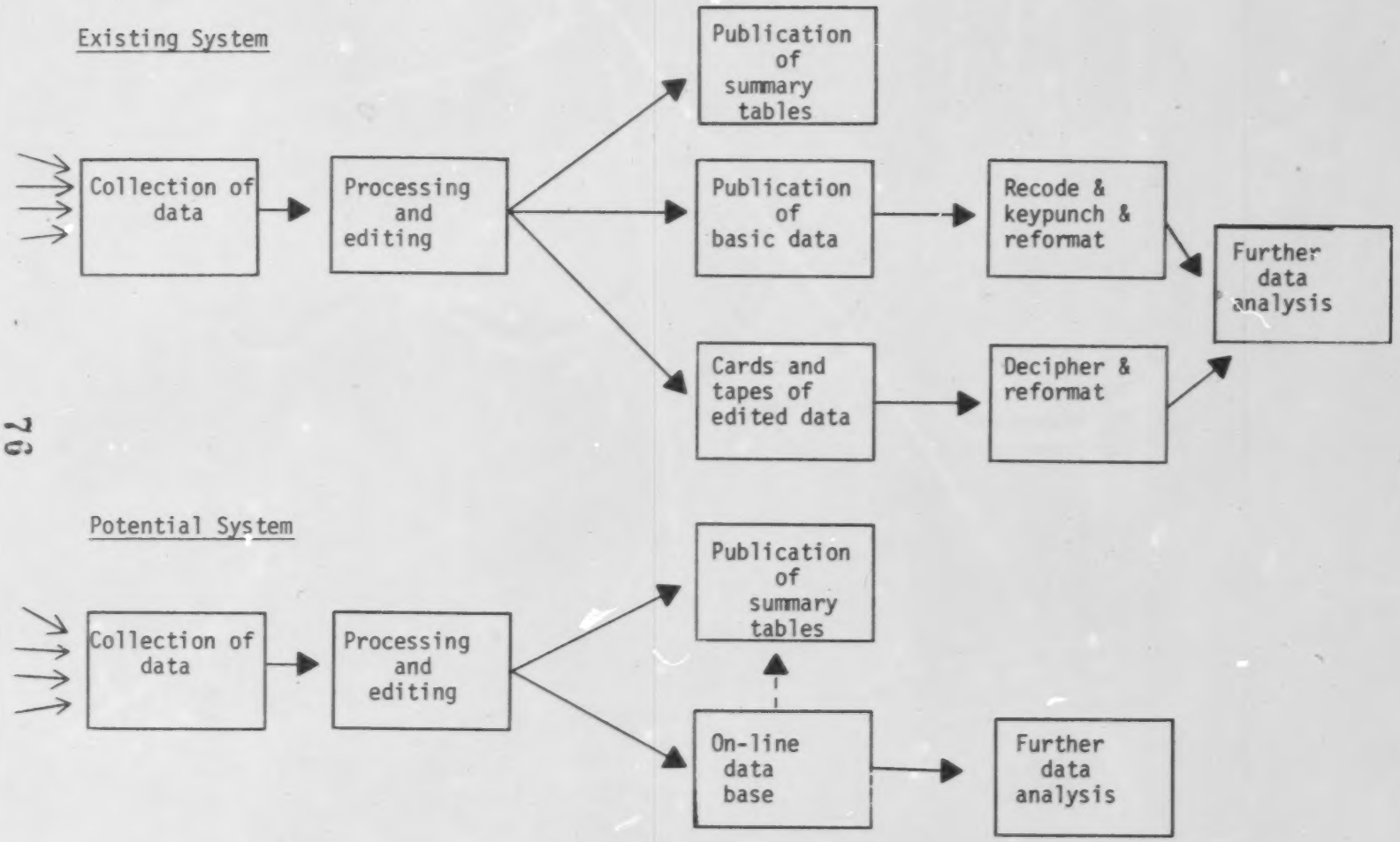
some basic descriptive information on several files. This list of data files came about through the work of the staff of the National Commission on the Financing of Postsecondary Education, and the list is certainly not complete. Due to confidentiality arrangements between the suppliers and the collectors of the data (an issue to be discussed later), some items of data are not freely transferable to the general public.

With respect to institutional data files, three categories dealing with the number of institutions in the data base are appropriate: (1) total universe--all of the institutions are included. The only base of data that even comes close to falling into this category is the combination of the HEGIS enrollment file and the Office of Education's Vocational Education Directory Survey. (2) subsets of the universe--all of the institutions within a specific sector of the postsecondary education industry. Examples of this type of data file are the Office of Education's HEGIS files, which represent the higher education component of the postsecondary education universe, and the Association of Independent California Colleges and Universities' data file on 51 California private higher education institutions. (3) samples of the universe--some random and possibly stratified selection of institutions from the entire universe. Examples are the National Commission on the Financing of Postsecondary Education, Survey of Postsecondary Career Schools, which is a sample of 227 trade and vocational schools, and Blau's sample of institutions for his administration and organization study.

The last three entries in Chart 2 (19, 20, and 21) are included as illustrations only, since many other special interest groups (such as AICCU), many other special research studies (such as Blau's), and many other states besides Illinois have developed data bases for their specific group of institutions. The point to be made here is that these smaller files of data have considerable potential usage beyond that of the initial intended purpose. For example, the state of California may be interested in comparing institutional information with Illinois, and other researchers may want to utilize Blau's data on his sample of institutions and combine the information with other data.

(c) Data Management Frustrations: Current data management practices frustrate many potential data users and prevent or severely limit the use of data files by organizations other than those that actually collect the data. The flow of data from the suppliers or the institutions in this case is illustrated in Chart 3 with the two primary areas of frustration indicated. Unfortunately, computers are very precise pieces of equipment and demand very explicit and detailed instructions. At the same time, data processors often became lax in providing full documentation on data file structures and characteristics, under the false assumption that everybody else will understand or that everyone else constructs files the same way. Nothing is more frustrating than receiving a tape of data and then having to go through a month or two delay attempting to figure out what is really on the tape and where everything is located exactly. Much time and many resources are wasted in this effort. Duplication of efforts occurs frequently with the same data being keypunched and

Chart 3: Flow of Data



* indicates frustration points

verified by several organizations because of the lack of communication on the existence of data files as discussed in (b) above. With the rapid increase in time-sharing capabilities and the establishment of communication links across the country at a reasonable cost, perhaps some of these frustrations can be avoided and a more rapid flow and broader use of data occur with organizations beyond the one conducting the survey for a specific purpose. An example of this potential is provided by the data base constructed by the National Commission on the Financing of Postsecondary Education and is illustrated in Chart 3. Utilization of time-sharing hardware, remote terminals, a general data retrieval software system, a general statistical software package, and FORTRAN and PL 1 processors gave to anyone in the country the capability of retrieving data from the massive data base and of performing any type of analysis on the data.[8]

(d) Synergy of Several Data Files: The combining of data on an institution-by-institution basis from several sources and different surveys has not been attempted to any great extent in the analysis of

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[8]For Additional information on the NCFPE data base, see the following:

a) D. Carlson, J. Farmer, R. Stanton, "Towards a National Post-secondary Education Data Base," proceedings of the 1973 CAUSE National Conference.

b) D. Carlson, J. Farmer, "NCFPE National Postsecondary Education Data Base Directory," U.S. Government Printing Office, April 1974.

c) D. Carlson, J. Farmer, G. Weathersby, "A Framework for Analyzing Postsecondary Education Financing Policies," U.S. Government Printing Office, May 1974.

the supply of postsecondary education services. The primary reasons for this situation not occurring have already been mentioned above: the existence of many data files is not generally known and the current means of data management for sharing data files is very slow and frustrating. In many cases the combined analysis of several data files simultaneously would yield much more useful information than separate analyses of each file individually. For example, the College Entrance Examination Board's College Locator Service data file contains information on a large number of special programs offered by the institution and on various student activities available. Combining these data with information on research activities obtained from the National Science Foundation file and with the employee, physical facilities, and finance information would yield a very rich body of data on institutional activities and resources. Separate analyses of each of the five files does not allow the analyst to correlate all of the institutional activities with all of the resources. Similar examples can be constructed by linking together other files from Chart 2.

A quick analysis of existing files can also be a great aid in constructing new surveys, for determining the appropriate sample, and in placing a sample in proper perspective with respect to the universe of institutions. For example, the National Commission on the Financing of Postsecondary Education trade and vocational school survey sample was selected by utilizing the Office of Education Vocational Education Directory Survey as representing the appropriate universe. This procedure allowed us to

obtain a sample representation of the universe stratified along two dimensions (type and control). Furthermore, an analysis of existing data files can suggest appropriate types of information to seek in a new survey and can indicate where the holes are in the currently available data files.

A combined analysis of data files also provides a very good check on the accuracy of the data in any one of the files. Many of the surveys on institutions have overlapping areas of information that can be compared across surveys for consistency. Along the same lines, special studies of some subsector or sample of institutions can be placed in perspective with respect to the universe of institutions by performing some quick computations. For example, are the private institutions that are members of the Association of Independent California Colleges and Universities typical of all private institutions? Are they of comparable size? Do they have similar revenue structures?

(e) Neglected Areas: Only a few very general areas for which there currently are very few data on postsecondary education institutions are discussed in this section. I am sure that the list can be expanded very easily. There is currently no consolidated, accurate source of quantitative information where analysts and researchers can obtain reasonably up-to-date data about the entire range of federal postsecondary education, institutionally based programs. Special programs, graduate programs, and other institutional activities lack a very complete

description in any existing survey. The College Entrance Examination Board's College Locator file comes the closest but lacks any quantitative information on how many students participate or the amounts of institutional resources devoted to the programs. Data useful for the construction of qualitative measures of institutional activities and performance are also needed. Similarly, data are needed for the development of indicators of financial distress.[9] As mentioned earlier, there currently exists a large gap in the data available on the trade and vocational schools as compared to the traditional colleges and universities.

Although attention should be given to these neglected areas of data, all efforts should not go into designing and constructing new data surveys of postsecondary education institutions. As the theme of this paper suggests, many other problems and tradeoffs exists which need to be evaluated and dealt with at the same time.

(f) Confidentiality and Political Issues: Every organization conducting a survey of postsecondary education institutions owes an obligation to the participating institutions not to let the information be misused according to initial agreements between the suppliers of the data and the collectors. For example, the National Center for Educational Statistics with its finance and employee surveys has promised to participating institutions upon request that they would not let particular data items be released to the public in a manner that would allow the individual

[9] See Chapter 5 (written by Hans Jenny) of Financing Postsecondary Education in the United States, U.S. Government Printing Office, December 1973.

institution to be identified. This agreement has the unfortunate result of preventing a lot of data from being used for analytical reasons. Fortunately, it appears that through extensive efforts by NCES only a very small number of institutions currently are restricting public usage of their data. A similar example is given with the file of data collected by the CEEB. Several of the items dealing with the financial aid programs of the institution were deleted in order to make the file accessible to the general public. Since CEEB collected all these data with no real plan of making them public and with no idea that the data were ever of any use to anyone besides themselves, it is quite possible that this problem can be eliminated in the next yearly survey by explaining the possible usage of the information and by obtaining permission to expand the usage of the data.

The belief that "data is power" is another factor that prevents the free flow of data to multiple users. Since conducting a survey of a large number of institutions involves a considerable investment of time and resources, it is only natural that the collecting organization wants to have a monopoly on the data for at least a short period of time. The collecting organization wants to be able to put out publications based on the data before anyone else does. The usual case, however, is that other users want to use the data for completely different purposes. This situation is undoubtedly a tough issue and one that must be faced in order for there to be more sharing of data on postsecondary education institutions on a timely basis by research organizations across the country.

(g) Time vs. Accuracy: Although everyone has a high regard for and insists upon accuracy of data, accuracy should be placed in perspective with other factors and should be considered as a tradeoff with these other factors. One of the most crucial of these factors and the one that most directly conflicts with accuracy is time. Which is the more useful for a decision maker, preliminary data on a timely basis or complete, fully edited data a year or so late? Coleman comments on this tradeoff in his distinction between policy research and discipline research. He states:

> For policy research, partial information available at the time an action must be taken is better than complete information after that time.[10]

This tradeoff is not easy to evaluate and different people definitely have varied preferences with respect to this tradeoff. Unfortunatley a lot of data are tied up and not available for use because of a disproportionately large weight attached to accuracy and little weight attached to timeliness. The user of the data should bear the burden of any inaccuracies in unedited or partially edited data, not the collecting or processing agency.

(h) Structuring the Data: Although most institutional data files do not utilize the following technique very much, the actual raw value of the variables should be ircluded in the data base rather than forcing some

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[10] J. S. Coleman, "Policy Research in the Social Sciences," General Learning Press, 250 James St., Morristown, N.J.

classification scheme onto the variable. For example, the actual enrollment is much more useful than a code of 1 = 0 to 100, 2 = 101 to 200, etc. Although the tradeoff here is between detail and storage space (the size of the data element), the problems of comparability across surveys and over time of using a coded scheme are too great to warrant using them.

(i) One-Way Flow of Data: The primary flow of data (and in many cases the only flow of data) has been from the surveyed institution to the surveying organization. There has been very little flow of information or feedback in the other direction. More feedback could possibly lead to increased confidence on the part of the suppliers of the data in how the data are being used. This procedure could lead to greater data accuracy through a more conscientious effort on the part of the suppliers.[11] Also, as newer management techniques are developed for postsecondary education institutions, this data feedback may become an important and useful source of information for institutional decision making.

An example of providing feedback information to education institutions is given by the California State Department of Education. For about fifty key variables, including pupil-teacher ratios, costs per pupil, and the scholastic ability of the pupils, the Department of Education calculates a profile of each school district showing the overall mean for that particular subset of school districts (elementary, high school,

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[11] John Minter's experience with showing institutional administrators their own HEGIS data along with averages and other institutional data via an interactive, time-sharing system has lent support to this hope. The administrators' first reactions have been one of amazement that they can actually examine their data in this manner and their second reaction is that of concern over the accuracy of their own data.

unified), the specific school district's value of the variable, and the percentile rank of the district. In this manner, the school district managers can see exactly where the district stands relative to all other similar districts. This example, illustrated in Chart 4, is very simplistic and many other types of profiles could be developed and provided fairly easily.

(j) Specific Statement of Questions: With the detail contained in the large number of data bases describing institutions providing post-secondary education services growing quite rapidly, the types of questions that can potentially be answered are becoming more complex and detailed. For example, asking for enrollment information is not very simple given the detail that is available. Which enrollment figure is desired: full-time, part-time, degree-credit, nondegree-credit, resident, nonresident, undergraduate, graduate, male or female? Other types of data have similar detail which requires well specified requests for information and concisely stated questions if they are to be answered accurately.

Also, as specific questions are answered from the data, other questions immediately come to mind. This type of interaction between the data base and the decision maker can be very valuable, but it does require a very rapid response on the part of the analyst with the data base. It is difficult to pose all of the necessary questions at the outset of an analysis so that a single computer run on the data can be made to provide all of the required information. More specific and detailed questions require a direct interaction with the data base. This type of interaction is illustrated in Chart 5 utilizing HEGIS data and the DS/3 data retrieval/query system.

Chart 4: Sample Profiles of School District Performance - California State Testing Program

DISTRICT VARIABLES	SANTA BARBARA - GUADALUPE UNION ELEM							SANTA BARBARA - HOLS ELEMENTARY						
Output factors	Median scores for this district		State percentile ranks of district median scores		State percentile ranks of predicted score ranges	Performance Index	Percentile ranks of district median scores (X) and predicted score ranges (O) 1970-71	Median scores for this district		State percentile ranks of district median scores		State percentile ranks of predicted score ranges	Performance Index	Percentile ranks of district median scores (X) and predicted score ranges (O) 1970-71
	1969-70	1970-71	1969-70	1970-71	1970-71		1 25 50 75 99	1969-70	1970-71	1969-70	1970-71	1970-71		1 25 50 75 99
Reading test scores:														
Grade 1	23.4	22.5	65	52	11-39	A		24.0	31.8	69	92	57-80	A	
Grade 2	40.3	27.2	49	57	12-35	A		59.1	34.0	95	93	60-81	A	
Grade 3	57.0	66.2	29	65	10-37	A		77.0	75.6	97	95	66-84	A	
Achievement test scores:														
Grade 6 Reading	44.8	49.8	7	14	11-30	W		69.5	71.4	91	95	68-84	A	
Language	50.8	53.3	21	34	18-43	W		65.5	66.3	92	94	65-85	A	
Spelling	22.1	23.0	49	71	24-53	A		24.2	24.7	91	93	62-82	A	
Mathematics	65.7	70.7	16	44	19-42	A		80.9	84.9	88	98	63-84	A	
Grade 12 Reading	--	--	--	--	-----			--	--	--	--	-----		
Language	--	--	--	--	-----			--	--	--	--	-----		
Spelling	--	--	--	--	-----			--	--	--	--	-----		
Mathematics	--	--	--	--	-----			--	--	--	--	-----		

Input factors	District values		State percentile ranks of district values		1969-70 = (0) 1970-71 = (X) Both = S	District values		State percentile ranks of district values		1969-70 = (0) 1970-71 = (X) Both = S
	1969-70	1970-71	1969-70	1970-71	1 25 50 75 99	1969-70	1970-71	1969-70	1970-71	1 25 50 75 99
Minimum teacher's salary	$7,199	$8,099	74	89		$7,199	$8,099	74	89	
Maximum teacher's salary	$10,800	$11,700	36	40		$15,000	$14,400	95	74	
Median teacher's salary	$9,375	$10,013	60	60		$9,938	$10,600	74	73	
Average class size grades 1-3	24.2	25.6	26	40		23.4	22.5	21	16	
Pupil-teacher ratio grades 4-8	26.6	27.3	44	50		24.3	25.4	22	29	
Percent nonteaching personnel	12.9	12.1	66	61		13.9	16.8	75	92	
General fund tax rate	$2.92	$3.07	69	69		$2.31	$2.45	44	47	
General purpose tax rate	$2.51	$2.50	76	74		$1.95	$1.94	56	51	
Assessed valuation per unit a.d.a.	$8,688	$8,943	10	10		$33,420	$36,119	66	69	
Percent minority pupils, total	80.2	86.1	98	99		6.9	7.5	33	32	
Percent American Indian	0.0	0.0	17	19		0.0	0.0	17	19	
Percent Negro	1.5	0.8	76	68		0.3	0.5	57	63	
Percent Oriental	4.1	4.3	96	97		0.5	0.5	53	53	
Percent Spanish-surnamed	74.5	75.7	99	99		6.2	5.6	45	42	
Index of family poverty	$69.30	$61.64	98	95		$2.70	$3.45	15	14	
Scholastic ability:										
Grade 6	88.0	87.3	8	9		104.8	107.0	90	96	
Grade 12	--	--	--	--		--	--	--	--	
Pupil mobility:										
Grades 1-8	.82	.85	64	49		.91	.92	20	18	
Grades 9-12	--	--	--	--		--	--	--	--	
Rate of staff turnover	18.8	17.6	74	81		2.1	11.4	22	53	
Expenditures instruction/unit a.d.a.	$481	$536	37	42		$628	$663	75	74	
Regular a.d.a grades 1-12	683	705	49	49		1,270	1,233	60	60	

Chart 5: Illustration of Probing an Institutional Data File

```
> SUBSET W CARNCODE EQ 21 AND CONTROL EQ 1 AND REGTOT GT 0
  85 ENTRIES QUALIFY                    (analyze public comprehensive colleges
                                         for which there are financial data)

> SUMMARY (REGAFG *100)/REGTOT          (percent federal appropriations are
                                         of educational and general revenues)
         (REGAFG *100)/REGTOT

  CNT              85
  SUM             246
  AVE               2
  MIN               0
  MAX              61

> TA WH (REGAFG *100)/REGTOT GE 25
  2 ENTRIES QUALIFY

> TA WH (REGAFG *100)/REGTOT GE 10
  4 ENTRIES QUALIFY

> PR RACE, DEVFUNDED WH (REGAFG *100)/REGTOT GE 10
                                        (print the code for the predominant race:
                                         1 - White, 2 - Black and the code for
  RACE        DEVFUNDED                 whether the institution is funded through
                                         the developing institution program 1 = yes,
    2             1                     0 = no)
    2             1
    2             1
    1             0
```

This brief interaction with the HEGIS file not only yields the answer to the original question (compute the average percentage that federal appropriations are of educational and general revenues) but allows the user to go on and determine some of the characteristics of the institutions that have very large percentages of federal money. This interaction requires only a few minutes rather than several separate computer runs.

To enhance this responsiveness with the data base, increased communications are also required between the decision makers, the analysts and researchers, the data collectors, and the data suppliers. Without feedback between these levels, the detail of the data will result in confusion rather than in increased information for the decision makers.

ANALYTICAL TECHNIQUES

In addition to the ten observations discussed above concerning the existence, availability, and management of postsecondary education institutional data, a couple of general observations are made in this section with respect to the analytical techniques currently available or that will be necessary in order for the analyst to extract useful policy or management information from the rapidly growing base of quantitative data. Referring back to the theme of this paper, it is very easy to complain that we do not have the appropriate basic data for a particular analysis when the real problem is that we lack the appropriate quantitative tools to extract the information that we want from the data.

Postsecondary education institutions are very complex organizations with a large variety of goals and objectives. Very little is currently known about the production behavior of these institutions. With the present interest in utilizing limited public resources efficiently and effectively, as well as in meeting some of the other demands mentioned at the beginning of this paper, the need for a better understanding of the relationships between institutional inputs and outputs is necessary.

Given the many dimensions of this estimation problem, I am not sure that more detailed and comparable data are the only answer. Additional analytical techniques are going to be necessary to extract estimates of these relationships out of the mass of data.

Empirical economists have been struggling with the problem of specifying and estimating production and cost functions for multiple output and multiple input firms for many years with no definitive technique resulting. The economist's favorite tool, least-squares regression, has not provided very much help in this problem except for the case of a single, well-defined output. For this case, the output is simply regressed on all of the inputs. For the case of more than one output, either one output has to be arbitrarily chosen as the dependent variable and the others considered as independent variables, or an output index has to be constructed to reduce the vector of outputs to a single variable. The use of canonical correlation for the multiple-output, multiple-input case has been attempted by the specification of an aggregate linear functional form but the approach is very extremely difficult to implement.

Another problem that currently exists with the usual estimation technique deals with the distinction between average behavioral relationships and frontier or efficient behavioral relationships. In the simplest case, the problem can be stated as follows: Are we interested in the <u>average</u> cost per student (for example) or are we concerned with determining the <u>minimum</u> cost per student? I am sure that we would like to know something

about both of these variables. Extending the problem to the more complex case involves considering a multiple-output, multiple-input situation where we are interested in production and cost functions. In this case, the question can be stated as follows: Are we interested in the average production function or are we concerned with determining the frontier or efficient production relationship? Again, we are most likely interested in both relationships. Unfortunately, most of our estimation tools and techniques deal with the determination of average relationships. There is currently very little available to aid us in determining efficient relationships.

Further estimation problems are caused by our current, limited understanding of the production and decision processes occurring at schools, institutes, colleges, and universities of postsecondary education. With little understanding of how educational inputs are transformed into educational outputs (however defined), the quantitative specification of functional relationships between inputs and outputs is nearly impossible. One of the ways that we might use to improve our understanding of the production process is through the exploration of institutional data. Therefore, we are in a full circle, which means that a lot of hypothesizing and testing of behavioral theories needs to be done.

We may soon be past the point where simple ratio comparisons between institutions and types of institutions will satisfy the needs of decision makers and policy makers. Certainly our data are becoming more detailed all the time. With this increasing detail comes the challenge to researchers

to extract more complex relationships describing the behavior of the postsecondary education supply sector. I am not sure that we currently have the analytical tools to meet that challenge.

A final observation concerning the linkage between the data and the analytical tools is necessary at this point. Looking back at Chart 3 under the existing system, it is shown that usually each different analysis performed by a different researcher or organization involves an additional recording, keypunching, and reformatting of the data. However, if it is possible to operate with a system such as that developed by the National Commission on the Financing of Postsecondary Education, the analytical tools are going to have to be linked more directly to the data management system. That is, to avoid unnecessary and expensive recoding and reformatting operations, it is necessary that the analytical tools be able to interact directly with the data base. This interaction existed with the NCFPE system since the data management software allowed statistical routines and user-written routines (FORTRAN, PL 1, etc.) to interact directly with the same data files that were used by the data-retrieval and query software. Not all data management systems support this added flexibility.

CONCLUSIONS

The major theme that I have tried to develop in this paper is that the appropriate data on postsecondary education institutions is not necessarily missing but that our abilities and capabilities to fully utilize

these data for extracting information for policy analysis have fallen short of the potential. Simply designing more surveys and collecting additional data will not solve the problem.

Three general suggestions for possibly solving this data/information problem can be summarized from the observations discussed in this paper.

(a) Fully Explore Existing Data: Several of the data files listed in Chart 2 have not been systematically analyzed, especially in combination with other data files. Prime examples are the National Science Foundation research file, Council for Financial Aid to Education voluntary support survey, the developing institution file, and the nontraditional institution files (Carnegie, FTC, Office of Education, and NCFPE). In addition, as the IEP data become available from NCHEMS, they should be thoroughly analyzed, since they will provide a test of what we all have been asking for--comparable and detailed institutional data. We need to get analytical tools developed so that we can fully utilize this detailed data.

(b) Develop Better Data Management Procedures: Accessibility to data on a timely basis is crucial for policy analysis concerning the supply of postsecondary education services. If this accessibility is to come about, better means of sharing and disseminating the information are going to be needed. The computer hardware and software seem to be available and a great deal of the data are available. The missing link is simply to pull everything together.

(c) Develop Additional Analytical Techniques: Data have to be summarized in order to provide useful information to policy makers. Presently, we may not be extracting as much information as possible from available data sources because of a lack of appropriate analytical tools. Given the complexity of the postsecondary education industry and the interests of policy makers, additional tools are going to be needed to answer the many questions concerning postsecondary education institutions.

RESPONSE

by

David Brenneman

Dr. Brenneman is an economist, currently Staff Director of the National Board on Graduate Education. In January, 1975, he will join the Brookings Institution as a Senior Fellow in Economic Studies.

During my second reading of Daryl Carlson's interesting manuscript, I made several marginal notes, and found that nearly all of my reactions were favorable. The typical comment is "good point" or "emphasize." Before extending a few of his observations, I shall reinforce several of his most important points with examples from my own experience with analysis of graduate education.

First, one of the principal points of Carlson's paper (and, I gather, of this conference) is the observation that many data files on postsecondary education currently exist that are generally not well known to researchers and analysts, and for that reason are underutilized. Carlson's plea is that we make better use of what we have before trying to generate new surveys. As a supporting example, I discovered last year the existence of a detailed annual survey of graduate student financial support conducted by NSF for the last seven years. To the best of my knowledge, these data have been virtually unused by educational researchers, although these

surveys comprise one of the richest sources of detailed departmental information available. Undoubtedly, someone at this very moment is constructing a new survey to assess the very information dutifully being collected by NSF all these years.

To support Carlson on a related point, an enormous amount of time is wasted in getting data from someone else's computer system. Although I acquired the complete data tapes from the previously mentioned NSF surveys over a year ago, only in recent months have they been useful for analysis, with the delays caused by precisely those factors cited in Carlson's paper.

The lack of coordination in the collection of data is a theme emphasized in virtually every published report of the National Board on Graduate Education (NBGE). Although much information on graduate education and research is collected by various federal agencies, for example, nowhere is it brought together at a single point and examined systematically in a fashion useful for policy making.[1] Similarly, the systematic analysis of labor market projections for highly trained manpower suffers from a failure to bring the relevant (and largely available) information together within an analytical framework that will allow useful policy analysis. To remedy this, Richard Freeman and I have argued for the development of econometric models of the Ph.D. labor market, based on

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[1] For further discussion on this point, see Chapter 7 in the NBGE report Federal Policy Alternatives Toward Graduate Education (Washington, D.C.: National Academy of Sciences, January 1974).

existing economic theory but with the stress on the intellectual discipline that such modeling efforts would impose on the collection and analysis of data rather than on the model's forecasts.[2]

I would have welcomed more discussion in Carlson's paper of ways to implement many of his suggestions regarding data management and coordination. Exhortation and pointing out the obvious are not enough. For example, who would dispute his sensible observations on the trade-offs between timeliness of data and accuracy, and yet years of complaining by policy makers and researchers have not managed to speed up the availability of data from the National Center for Educational Statistics.

In my final comments I want to extend Carlson's discussion in two directions. Carlson begins his paper by noting the increased demand by various governmental and other agencies for information on postsecondary education supply and costs, a demand that is creating many of the surveys and subsequent data management problems that he discusses. Since such information and analysis is costly, those who request it should measure the benefit of information against its cost in order to minimize the waste that occurs when the "wrong" questions are asked. For example, I would argue that the expenditure of considerable sums by state and federal government agencies in search of highly disaggregated "unit costs" of instruction by level and discipline is an instance of asking the wrong question. Such detailed cost data are valuable for management,

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[2]Richard B. Freeman and David W. Breneman, Forecasting the Ph.D. Labor Market: Pitfalls for Policy, a technical report presented to the NRGE (Washington, D.C.: National Academy of Sciences, April 1974).

and college and university administrators should want them, but it is not clear why state or federal agencies that are not involved in direct institutional management should need this particular type of information. If increased accountability is the concern, surely there are preferable and more direct ways to achieve it. In short, as data processing capabilities expand, the need for good judgment in using the machinery increases; the problems are not simply technical.

A second area that Carlson hints at but does not develop is the need to increase our understanding of the supply behavior of producers in the postsecondary education industry. Carlson casts the discussion in terms of the statistical problems of estimating production and cost functions in multiple-input, multiple-output firms that cannot be assumed to be minimizing costs; while this is part of the problem, we also need more work on the behavioral theory of the educational firm.

Assuming this country remains committed to a decentralized "system" of postsecondary education, then any serious attempt to understand supply behavior will require a body of theory analogous to the economist's theory of the firm. Incidentally, this aspect of the expansion from higher to postsecondary education does not pose as serious an analytical problem since the behavior of profit-making proprietary schools should be relatively predictable; understanding the nonprofit sector remains the challenge. Methodologically, I believe we need several careful case studies of college and university behavior, including analysis of behavioral responses to changes in the institution's environment coupled with close examination of the internal decision-making process.

As clearer understanding of college and university economic behavior emerges, it should be possible to generalize at higher levels of abstraction toward a theory of the supply of postsecondary education.

If the above approach is sound, then we should be wary of producing large-scale simulation models of the "system" of postsecondary education, since at this stage such models are certain to lack the necessary behavioral underpinning. The existence of the computer has made such SONK*ing all too common, but we are beginning to learn of the perils of premature reliance on "sophisticated" models of complex social processes.[3] Humility, not arrogance, should set the tone for our continuing research efforts.

* Scientification of Non-Knowledge

[3]For a fascinating discussion of the failure of urban simulation models, see Garry D. Brewer, Politicians, Bureaucrats, and the Consultant (New York: Basic Books, Inc., 1973).

RESPONSE

by

Dorothy Gilford

Mrs. Gilford is Assistant Commissioner for Educational Statistics, National Center for Educational Statistics.

Daryl Carlson's constructive and useful paper develops the basic theme that our inability to find satisfactory quantitative answers to many policy and management questions concerning the supply of postsecondary education services stems from a combination of communication, data processing/management, and analytical technical problems and not solely from a lack of survey data. I agree fully with his thesis, in fact, as I read his fuller development of the theme it seemed very familiar to me. Finally I realized why. In May, 1971 Dr. Sidney Marland, then Commissioner of Education, led a planning conference at Airlie House to develop a five-year plan for the Office of Education and NCES prepared a 50-page proposal for that conference for a project called the Common Core of Data for the Seventies. I have attached to this response five pages from that proposal to document how fully I concur with Dr. Carlson's paper. You will note that on the two system sheets, the first showing the flow of data to NCES and the second showing the flow of services from NCES, we proposed several satellite centers for the National

Center for Educational Statistics. One of these was a National Reference Center for Educational Statistics and I have appended a description of that Center. In this description you will see that the concept was for the Reference Center to have a computerized data base, incorporating not only data collected by NCES but also other data bases relative to education, and to provide service of this data base to the education community. Also proposed was an Analytical Center (description appended) designed to carry out analysis of the data in the Reference Center for purposes of policy makers. A third satellite center, an Institute for Survey and Applied Measurement Research in Education was proposed to develop the new types of analytical tools which are essential for full and effective extraction of information from the data bases maintained by the reference center. These are all activities which are proposed in the Carlson paper. These pages from the CCD proposal have not been disseminated because the satellite centers were not approved by the Office of Education since there was an unresolved issue about the appropriate organizational location for the analysis and applied research activities. Much of the balance of the plan was accepted by the Office and during the past three years the concept has been going through the compression process which generally occurs in the Federal appropriations process. In the FY 73 budget proposal, the National Reference Center became a proposed time-sharing system known as the educational statistics information access system, EDSTAT, and the analytical center for educational statistics became a staff of five analysts in NCES. The funds for the Common Core of Data in the FY 73 budget have recently been released and are being used in large part for the development of the EDSTAT system. The request for analysts was not met in either the FY 73 or the FY 74 budgets nor in the FY 75 budget. Nonetheless, I concur in the importance of analysis and we shall persist with our concept.

Dr. Carlson has described the data base developed by the National Commission on the Financing of Postsecondary Education and I have mentioned EDSTAT. Therefore, I would like to bring you up to date on the evolution of this data base. In January of this year the Commission transferred their data base to the National Center for Educational Statistics. We have been building on that data base as the first building block of EDSTAT which is to be a comprehensive data system for all levels of education. Several files have been added to the system, including a file on adult education in community groups resulting from a sample survey in 1972, a large data base on participation in adult education for the year 1972, and a file on opening fall enrollment for FY 74--a file with thirty variables for 3,014 institutions. This file is known as an edit level 1 file. As part of an effort to provide national data to analysts at a much earlier date than a formal statistical publication, data are being entered in EDSTAT at 4 levels of editing. Level 1 designates data which have received only a visual scan for gross errors and missing items prior to being keypunched. Edit level 2 data are data which have had cross checks and total checks carried out. Edit level 3 data have had all major tolerance checks made. Edit level 4 data are official statistics. Even level 4 will be available from three to six months before publication of the data. We expect that edit level 1 HEGIS finance data for FY 73 collected during FY 74 will be added to EDSTAT before the end of the month. As most of you know, this data base is available for use by anyone who has a terminal to access the

computer. Users pay only the telephone line cost and the cost of the actual computer time used. Although both The Chronicle of Higher Education and Science magazine have carried announcements of the availability of the system, to date there have been only seven users of the system, including three who were very active users at the Commission. NCES plans to move the system from SDC to Infonet and indeed we are at present building a module of EDSTAT in Infonet for the Elementary and Secondary sector. This will include ELSEGIS data for 1970, census data by school district for 1970, and Office of Civil Rights data on number of students and teachers by race. When that module is operating effectively on Infonet we will move the postsecondary data to Infonet. This will be advantageous to the users since Infonet is a network with nodes in twenty-eight large cities so telephone costs for most users will be much lower. I mentioned earlier that FY 73 funds for the Common Core are being used to build EDSTAT and at the present time we have released a request for a proposal for reviewing and revising 150 NCES data tapes for consistent formatting and adequate documentation for ultimate inclusion in EDSTAT. I envision that in two or three years EDSTAT will constitute a combined data source for all Federal programs for education, one of the needs expressed in Carlson's paper.

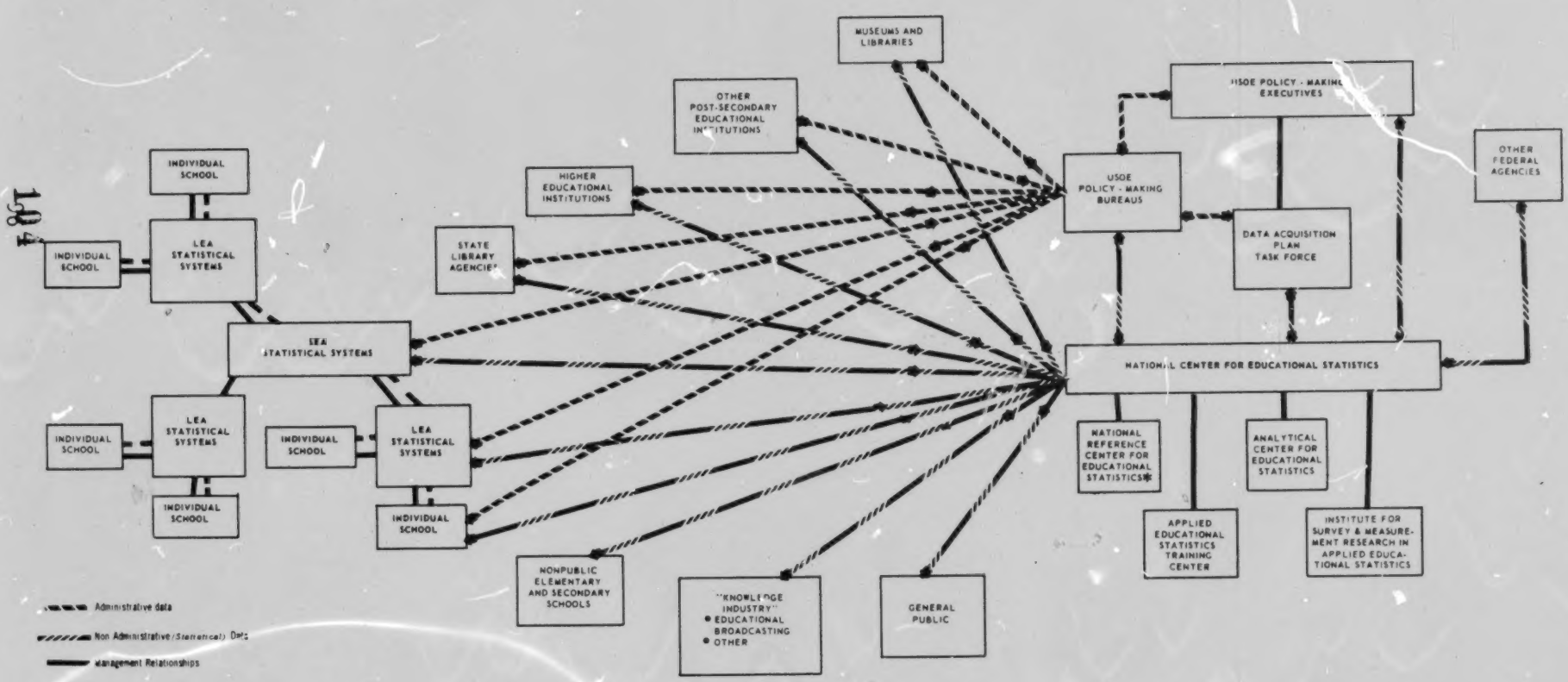
I would like to comment on one of the eight general forces for increased interest with respect to data on postsecondary institutions, the force of rising expectations. No organization has felt this more acutely than has NCES. In fact, the expectations for NCES are an order of magnitude greater than our resources. The fact is that educational

statistics have come a long, long way since 1965. The first data tapes in higher education are for the year 1965 and data tapes of HEGIS are available for each year from 1965 to date. The data have been collected in such a manner that generally it is possible to do time-series analysis with the data. Further, the development of the FICE code for institutions and implementation by many organizations of standard terminology developed by NCHEMS and NCES have made it possible to integrate files in a data base. On the other hand, there has been much frustration with the slowness of the information. It should be pointed out that three steps have been taken to alleviate this frustration. Four years ago NCES obtained legislative authority to charge for services, which made it possible to sell copies of tapes. Tapes are made available to users with reasonable restrictions prior to publication by NCES. Second, NCES moved to a series of early releases on higher education data. This year the enrollment data were available in December and the finance information in early May. Third, NCES is now providing partially edited data very early in the data-processing cycle. Limited manpower resources are a serious constraint in producing timely data.

There are two data resource problems which have not been mentioned and which I would like to raise for consideration. One is the need for a more effective mechanism for articulating the data needs of policy makers with the planning cycle of the data collectors. Several of the people in this room participated in a meeting chaired by Joe Cosand in the Gold Room at the Office of Education shortly after Congress had passed the Education Amendments of 1972. At that meeting considerable pressure was exerted on NCES to extend HEGIS to the noncollegiate postsecondary

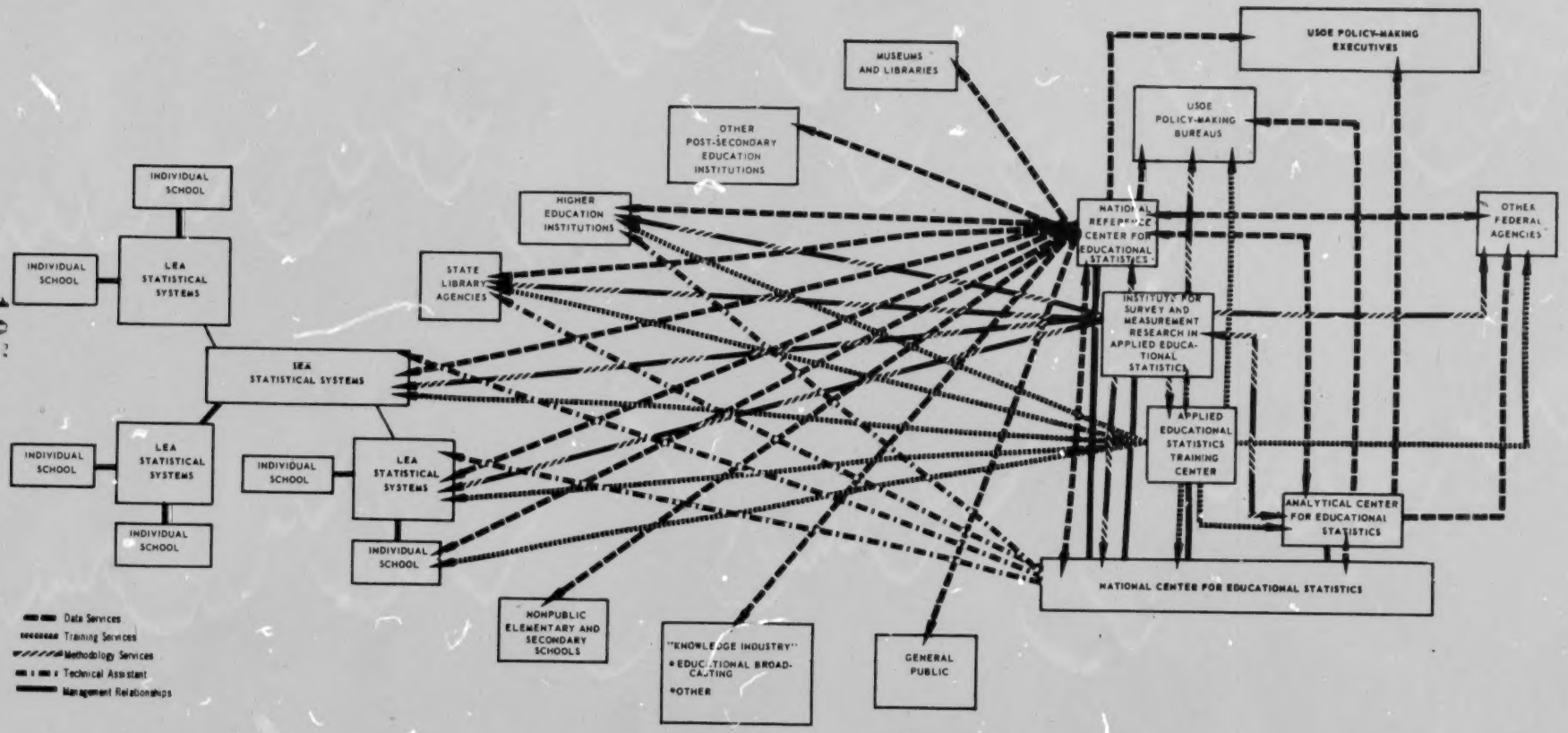
institutions. Note how very, very late the action was. Fortunately, this was a case where NCES had recognized a serious data gap and had moved to fill it eighteen months earlier. It was because of this that the Directory of Postsecondary Schools with Occupational Curricula was available not long after the legislation was passed. Once available, it became possible to institute a survey of these institutions. It would have been more useful if expression of this need had come two years earlier. A process which anticipates these needs with adequate time for data collection is needed. (I do not overlook the purposes of this seminar). A second problem is the need for analysts using a data base to provide feedback to the data producer. Feedback, in terms of anomalies in the data, classification systems which would have provided greater flexibility to the analysts, and missing data items which made full analysis impossible, will improve future statistics. We are fortunate in having two analysts in the elementary and secondary area who have been very conscientious in this responsibility and have thereby made significant improvements in our activities. Comparable feedback about postsecondary educational statistics would be most welcome.

COMMON DATA CORE FOR THE SEVENTIES
I - FLOW OF DATA



* Flow Treated as Data Service

COMMON DATA CORE FOR THE SEVENTIES
2- FLOW OF SERVICES



A BROAD VIEW OF INDIVIDUAL DEMAND FOR POSTSECONDARY EDUCATION, MAJOR POLICY ISSUES

by

George B. Weathersby

Dr. Weathersby is currently Associate Professor of Education at the Harvard Graduate School of Education. Formerly, he was Director of Research for the National Commission on the Financing of Postsecondary Education, a White House Fellow and Special Assistant to the Secretary of State, Director of the Ford Foundation Research Program in University Administration (at the University of California), Associate Director of Analytical Studies in the Office of the President of the University of California, and Lecturer in Economics and Operations Research at the University of California, Berkeley.

INTRODUCTION

"The demand for postsecondary education" is a phrase of economists' art which simply means the number and characteristics of adults seeking organized learning opportunities. In the past, this broad phrase has been usually interpreted rather narrowly to be 18-22-year-old individuals enrolled or seeking enrollment for degree credit in traditional collegiate institutions. The concepts and quantitative tools of economics and sociology, among other disciplines, have been applied to this narrow definition of student demand for several purposes including: (1) to analyze the characteristics of young adults enrolled for degree credit in colleges and universities; (2) to determine the major explanatory factors affecting student attendance decisions; (3) to relate student aspirations and expectations to their actual experiences; and (4) to study individual development in the cognitive and affective domains and the effects of the instructional programs and context on this development. In addition, researchers have studied the effects of the limited number of policy instruments available to public decision makers to affect changes in the demand for postsecondary education--policy studies to which I will return later in this paper.

Unfortunately, most of the thought that has been given to the demand for postsecondary education has focused on the 18-22-year-old population enrolled for degree credit in traditional collegiate institutions while public policy concerns have embodied much broader concepts--extending

from the 18-22-year-old age group to adults of all ages, from degree credit enrollment to all participation in organized learning opportunities, and from collegiate institutions to all appropriate forms of collegiate, noncollegiate, and community organizations. In this broader view, postsecondary education includes almost 78,000 institutions[1] offering formal, organized instruction to about 24 million individuals (see Table 1). Currently about 11,000 institutions enrolling about 10 million individuals are included in national policy consideration of postsecondary education. The growing interest in and concern for recurrent education and the increasing social legitimation of adult education suggest that the purview of national policy will continue to expand to encompass this broader view of postsecondary education. It is within this broader purview that we should begin to ask about the demand for postsecondary education.

THE MYTH OF THE STEADY STATE

In the last four or five years, higher (as opposed to postsecondary) education has been traumatized by the falling rate of growth of enrollment, or an absolute decline in enrollment at some institutions, and by the demographic statistics, such as plummeting birth rates and stable or falling trends in college attendance rates, which portend little change in enrollment in higher education for the next decade or two. After college enrollments more than doubled in the 1960s, they are forecasted to increase about 20% in the 1970s--a fall in the average rate of growth

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[1] In 1972 USOE reported approximately 2900 collegiate institutions, 11,700 noncollegiate institutions of which 8,200 are accredited, and 66,800 other organizations including churches, other religious organizations, YMCA, YWCA, Red Cross, civic groups, and other social service and cultural groups. Dorothy M. Gilford, "The Non Collegiate Sector: Statistical Snapshots of Adult Continuing Education" (paper presented at AAHE, Chicago, March 12, 1974).

Table 1
Participation in Postsecondary Education
in 1967, 1969 and 1972
(numbers in thousands)

	1967	1969	1972
Noninstitutional Civilian Population Age 17 and Over ('000)		130,314	138,865
Collegiate Sector			
Degree Credit Enrollment	6,409	7,484	8,220
Noncredit Enrollment	5,644	4,381	5,932
Noncollegiate Sector Enrollment			
Public Grade/High School		1,970	2,203
Priv Voc/Trade/Business		1,504	1,400
Other			
Employer		2,274	2,612
Community Organization		1,554	1,998
Tutor or Priv. Instruction		763	944
Other Sponsors		2,606	2,514
Unduplicated Postsecondary Enrollments			
Degree Credit	6,409	7,484	8,220
Nondegree Credit	11,718*	13,041	15,734
Total	18,127	20,525	23,954

*Estimated from 1969 and 1972 relationship of nondegree credit enrollment to degree credit enrollment.

Sources: "Noncredit Activities in Institutions of Higher Education - 1967-68", DHEW(OE) 72-13, GPO, 1972; "Participation in Adult Education - Initial Report 1969", OE 72-1, GPO, 1971; 1972 Adult Education Participation Survey, Preliminary Tabulations; "Projection of Educational Statistics to 1981-82", DHEW(OE) 73-11105, GPO 1973.

from better than 7% to less than 2%.[2] These demographic trends led Lyman Glenny, among others, to conclude that "institutional competition for students will increase to intense levels bordering on the rapacious. Some institutions--both public and private--will no doubt be forced out of business. Others will be reduced in size to less than half of current enrollments."[3]

These dire predictions of enrollment stagnation and institutional cannibalization are based on the assumptions that liberal arts is the message and 18-22-year-olds are the audience for postsecondary education, that institutions are unlikely to attract new clientele, and that continuing education is not likely to become an accepted pattern in our society.[4] While the oft-cited demographic and collegiate participation trends are substantiated by empirical evidence, the assumptions of the primacy of liberal arts, the absence of new clientele, and the illegitimacy of continuing education are not supported by the available data.

The Higher Education General Information Survey uses five categories of academic programs: liberal arts, occupational, professional, teacher training, and two-year. Without counting the many subcategories of each of these major categories, 22% of the programs offered in 1970-71

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[2] Financing Postsecondary Education in the United States, Government Printing Office, January 1974, p. 23.

[3] Lyman A. Glenny, "Pressures in Higher Education," College & University Journal, Sept. 1973, p. 7.

[4] Ibid.

by collegiate institutions were liberal arts, over one-half (54%) of the liberal arts programs were offered by liberal arts institutions.[5] However, these liberal arts institutions claimed less than 8% of the total enrollment in the collegiate sector.[6] The remaining 46% of the liberal arts programs are largely in comprehensive colleges and, while we do not know their enrollment by program, their total enrollment is 30% of the collegiate sector enrollment.[6]

Historically, liberal arts colleges and liberal arts programs have been major paradigms for American higher education; however, our educational enterprise has evolved into one in which most institutions are not liberal arts colleges, most academic programs are not liberal arts programs, and most students are not enrolled in either liberal arts colleges or liberal arts programs. The collegiate sector is currently engaged primarily in occupational, professional, and two-year terminal programs; the noncollegiate sector is engaged almost exclusively in occupational, professional, and short-term programs. As shown in Table 2, over 60% of the adult education activities are professionally related or for credit. In spite of its self-image, American postsecondary education is not about Thoreau's poets by ponds or Druids in forests, it is about people preparing, retraining, and upgrading themselves to work, to advance, to relax, and to broaden themselves. This is not said to be critical of liberal arts education; I personally believe the liberal arts must remain a vital participant in

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[5] Financing Postsecondary Education, p. 162.

[6] Ibid. p. 15. The enrollment figures are for 1972-73 while the program figures are for 1970-71, the last year for which program data were available at the compiling of the manuscript for Financing Postsecondary Education. However, there should be little discrepancy in the proportions of enrollment between these two years.

Table 2

Percent Distribution of Participation in Adult Education Activities

Activity	1969(%)	1972(%)
Adult Basic Education	4.0	3.5
Americanization	0.7	0.5
High School & Col. Courses for Credit	20.0	19.0
Technical and Voc. Skills	20.4	19.4
Managerial Skills	6.5	6.4
Professional Skills	14.5	16.8
Civic and Public Affairs	2.0	1.9
Religion	4.7	3.4
Safety	1.8	2.3
Home & Family Living	3.0	3.6
Personal Development	8.0	9.1
Hobbies	7.8	7.6
Sports and Recreation	3.1	3.5
Other	3.5	3.0
	100.0	100.0

Sources: 1969 Adult Education Participation Survey-Special Tabulations
1972 Adult Education Participation Survey-Preliminary Tabulations

postsecondary education. But I applaud the recent developments in national policy toward postsecondary education which recognize a broad view of individuals, institutions, and the substance of their mutual involvement.

The second assumption of steady state is that institutions of postsecondary education are unlikely to attract new clientele beyond their degree credit youth culture. Without needing to estimate the future potential market for new clientele, we can refute this assumption by simply looking at the current involvement of "nontraditional" clientele in postsecondary education. New clientele have already been attracted to postsecondary education and to traditional institutions; we have simply closed our eyes to these individuals. A 1967-68 USOE survey indicated that 55.5% of the 2202 surveyed institutions of higher education provided either credit or noncredit adult educational activities enrolling some 5.6 million adult registrants[7] in addition to their reported traditional degree credit enrollment of 6.4 million. Furthermore, these statistics are believed to "significantly understate the total number of registrations" for a variety of reasons.[8] Without compensating for undercounting the adult clientele we see that even seven years ago most institutions of higher education offered formal learning opportunities for adults, serving a clientele almost as large as the traditional youth clientele.

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[7]Florence B. Kemp, Noncredit Activities in Institutions of Higher Education, DHEW (OE)72-13, Government Printing Office, 1972. There is no evidence of the "full time equivalence" of these 5.6 million adult registrants.

[8]Ibid., p. 1.

However, while institutions of postsecondary education often do not recognize the large adult clientele they are now serving, they similarly do not recognize the large adult clientele that they are not serving. Table 3 shows that 29% of "would be" learners wanted to study at postsecondary educational institutions but only 17% of actual learners enrolled in postsecondary educational institutions. At the same time, twice the proportion of people studied at home or on the job (30%) as the proportion that wanted to (15%). Although this evidence is not conclusive, it does suggest that if institutions of postsecondary (and secondary) education were more responsive to the desires of adult learners, adult participation in postsecondary educational institutions might increase by 50%.

While the focus of this paper is individual demand, there is such a strong interaction between the institutional supply of learning opportunities and individual demand that two points of institutional behavior need to be mentioned. There are already a significant and growing number of adult nondegree registrants enrolled in traditional colleges and universities but we do not know whether this number reflects previous increases in institutional recruitment efforts that cannot be sustained or, on the contrary, whether this number is limited substantially by the lack of institutional responsiveness. At the same time, we also do not know the particular academic programs in which the adults are enrolled. The financial implications for institutions, which are not the topic of this paper, would be very different if most of the adults enrolled in existing academic programs instead of specially created continuing education programs.

Table 3

Relationship Between Locations
Desired and Actually Used
for Adult Learning

Locations	Percent* of Desired Locations		Percent* of Actually Used Locations	
Home	10		17	
Employer	5		13	
Public High School	16		9	
Priv. Voc/Bus School	8		3	
Public 2yr College	10	29	6	17
4yr College or Univ	8		6	
Graduate School	3		2	
Community Free School	10		3	
Business Site	5		5	
Indiv. Instruction	5		4	
Correspondence School	4		2	
Local Social Org.	3		6	
Arts or Crafts Studio	3		0	
Religious Group	2		6	
Government Agency	2		5	
Library, Museum	1		2	
Recreational Groups	1		2	
Other	6		7	
All Locations	100		100	

* Columns do not sum to 100% because of rounding.

Source: Carp et al. (1973), "Learning Interests and Experiences of Adult Americans." ETS, pages 76-77, 82-83.

The third assumption, that continuing education is not likely to become an accepted pattern in our society, is a belief that has been overtaken by events. While many college faculty members and administrators still denigrate continuing education when it comes to granting academic credit or evaluating faculty involvement and while most state and federal financing programs still exclude continuing education, individuals have voted with their feet and their dollars affirming that continuing education is indeed an accepted pattern in our society. In 1972, 26% of the 18-24-year-old population was enrolled in the collegiate sector[9] while in the same year 31% of all college graduates, 23% of all adults who had completed some college work, and 15-20% of all adults with incomes over $10,000 were enrolled in one or more continuing education programs (see Table 4). More women than men were enrolled and 45% of all adult participants were over 35 (see Table 5). In other words, in 1972 larger and more representative proportions of adult college graduates enrolled in a program of continuing education than the proportions of young adults enrolled in a collegiate program seeking a degree. Furthermore, one-eighth of the entire adult population was enrolled in 1972 in some form of continuing adult education. It would seem to me to be more accurate to restate the third assumption to recognize that public finance policies and traditional institutional policies are significantly incongruent with the accepted pattern of continuing education in our society.

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[9]U.S. Bureau of the Census, quoted in Financing Postsecondary Education, p. 137. The age range 18-24 is used because comparable 18-21 statistics are not available.

Table 4
1972 Participation Rates
in Adult Eduation
Classified by Income and Education

Income	Highest Level of Educational Attainment				All Educational Levels
	Non High School Grad	High School Graduate	Some College	College or Grad Degree	
0-2,999	2.6%	9.4%	20.4%	22.2%	5.1%
3,000-5,999	3.5	10.2	18.4	24.0	7.4
6,000-7499	4.0	10.7	22.2	21.3	9.4
7,500-9,999	4.8	11.3	23.1	30.4	11.5
10,000-14,999	5.7	13.7	22.8	33.2	15.2
15,000-24,999	5.4	14.2	26.4	33.8	19.1
25,000-over	3.3	15.0	21.5	26.5	19.9
All Income Levels	4.1	12.4	22.9	30.5	12.4

Source: 1972 USOE Adult Education Survey, Special Tabulation

Table 5

1972 Participation Rates
in Adult Education
Classified by Sex and Age

Sex	Age (years)	Percent of Participants (%)	Number of Participants ('000)	Adult Population* ('000)	Participation Rate (%)
Male	17-34	27.7	4,365	19,390	22.5
	35-54	18.2	2,855	21,825	13.1
	55+	3.3	518	17,111	3.0
All Men		(49.2)	(7,738)	(58,326)	(13.3)
Female	17-34	27.2	4,279	23,414	18.3
	35-54	18.2	2.870	23,895	12.0
	55+	5.4	847	21,628	3.9
All Women		(50.8)	(7,996)	(68,937)	(11.6)
Total		100.0	15,734	127,263	12.4

*Excluding current full time students.

Source: 1972 USOE Adult Education Survey, Special Tabulation

It is my view at this time that the attitude of steady state enrollments as a basis for public policy in postsecondary education is unsupportable for two basic reasons: (a) the assumptions on which the prediction of steady state is based--the primacy of liberal arts versus occupational and career training, the absence of new clientele, and the illegitimacy of continuing education--are not supported by the available evidence about higher education demand, and even less by the available evidence about postsecondary education demand; and (b) the demographic and participation trends in the adult population are just the opposite of the corresponding trends in the 18-22-year-old population enrolled in traditional higher education. While the adult population is growing at about 2% per year, continuing education enrollments are growing at about 7% per year[10]--the same rate higher education enrollments grew during the baby-boom years of the 1960s. This implies a 5% increase per year in the adult participation rate, an increase that is probably produced by the increasing proportions of adults who are college educated and of moderate and upper income. Furthermore, this increasing participation rate is applied to an adult population that is now more than 6 times as large as the 18-22-year-old population; the increasing adult participation will probably more than counter-balance the expected steady or declining participation rate of the 18-22-year-old population.

I must confess that I feel out of step with those predicting "steady state" stagnation. With apologies to Dickens, while for postsecondary education these are perhaps not the best of times, they are also far

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[10]Computed from Table 1.

from the worst of times: the demand for postsecondary education is strong and growing as adults of all ages seek personal and professional development; sensitive to the critical linkages between work and education,[11] most of the learning opportunities in postsecondary education are occupationally oriented; and postsecondary education has already done far more to serve a broad constituency than it recognizes or for which it is recognized.

PUBLIC POLICY CONCERNS ABOUT INDIVIDUAL DEMAND FOR POSTSECONDARY EDUCATION

American postsecondary education has many problems and numerous observers have compiled a long litany of disasters waiting around the next bend of the budget. The conditions of institutional financial distress, faculty collective bargaining, limited productivity gains, rapidly changing labor markets, and competing demands for public funds all severely complicate the lives of educational policy makers. Dr. Earl F. Cheit gave a highly lucid description of these conditions in a speech entitled "Coming of Middle Age in Higher Education."[12] That "middle age" is an appropriate descriptor of institutional problems and attitudes is very revealing; but even more profound is the realization that "middle age" is also an increasingly appropriate descriptor of the student body of postsecondary education.

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[11] See Work in America, MIT Press, 1973, Chapter 5 for a discussion of the relationship between work and education.

[12] Cheit, Earl F., "Coming of Middle Age in Higher Education," paper presented at National Association of State Universities and Land-Grant Colleges, November 13, 1972.

Comfortable with the youth-oriented view of the constituency of higher education and persuaded by the myth of steady state in individual demand for higher education, most state and federal policy makers have dealt with only a small part of the postsecondary educational enterprise. Similarly most researchers have focused their attention only on traditional enrollments in higher education. Consequently, we have little information to inform the decisions of policy makers dealing with the broad purview of postsecondary education. To determine what information about individual demand for postsecondary education would be most useful to policy makers, let me suggest what I think should be the major concerns of policy makers, particularly public policy makers.

Most of the concerns besetting policy makers in their consideration of individual demand for postsecondary education seem to fall into three areas: (1) the equity with which postsecondary education and public programs financially supporting postsecondary education are accessible within out society; (2) the effectiveness of public policy instruments in accomplishing public objectives; and (3) the division of responsibility for postsecondary education among federal, state, and local governments, participants (or their families), and the private sector.[13] All three of these major concerns can directly affect individual demand for post-secondary education and, in turn, all three are significantly affected

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[13] Institutional policy concerns about financial distress, governance, collective bargaining, increasing tenure proportions, and so forth, are not highlighted in this list because my focus is individual demand for postsecondary education. However, institutional considerations will be of direct concern when they affect one of these three major areas.

by individual demand for postsecondary education. Furthermore, I believe the three concerns about equity, effectiveness, and division of responsibility encompass the major public policy considerations of individual demand for postsecondary education. It is in light of these concerns that I suggest the kinds of information that would affect policy decisions and, therefore, data I believe should be collected and reported.

Equity

Equity is a particularly difficult concept to sort out. Perhaps it is easier to begin by agreeing what equity does not mean for public policy purposes. Equity does not mean that everyone makes the same decisions, that every first-year student enrolls in a community college, takes secretarial training, or buys chocolate ice cream cones. On the contrary, one of the basic notions behind "demand" is that individuals choose on the basis of their own preferences, which may well be different for different individuals. Consequently, as individuals have an equal opportunity to make their decisions consistent with their preferences, the types of institutions and educational programs they choose will probably differ significantly. (It is interesting to note that the "needs of the individual" have traditionally been determined by someone other than the individual in quesiton. It has always struck me as conceptually inconsistent to advocate access to postsecondary education on the basis of individual "needs" while denying choice among alternative forms of postsecondary education on the basis of individual preference.)

Equity does not mean that every person should receive the same public subsidy for his or her postsecondary education. In the Rodriquez and other decisions, the Supreme Court has held that elementary and secondary education is not a legally enforceable right; it would seem difficult to argue that postsecondary or recurring education is such a right. It is my understanding that the Rodriquez decision also means that there is no legal requirement to distribute public funds on an equal per capita basis. Independent of the legal argument, equal per capita subsidy distribution makes little economic sense for three reasons: (a) different training programs cost substantially different amounts and few argue that TV technicians and MD's should be trained at the same cost; (b) different financial subsidies are observed to be needed to modify the behavior of different groups of individuals whose participation is sought either for specialized skills or particular social objectives; and (c) different social benefits result from different educational programs.

Equity does not mean equal proportions of various demographic groups, such as women, minorities, or persons over 25 years old, participating in each form of postsecondary education. This notion of equity is tantamount to a quota system which, if rigorously applied, would arbitrarily constrain the participation of all demographic groups to a fixed ratio of the participation of the least interested demographic group--for example, if no American Indians chose to attend Swarthmore, Bennington, or UCLA, equal proportions equity would require those schools to close

their instructional programs. This is absurd and no one seriously advocates such an extreme notion of equity--yet this is the measure of equity of access most frequently used.[14]

It seems to me that our society's notion of equity evolves, like case law, from historical responses to particular situations. The last 20 years of progress in civil rights certainly affects our notion of equity; current legislation requires that individuals not be denied access to postsecondary education on the basis of age, sex, race (or ethnic group), country of origin, or religion. The last 15 years experience in federal student aid legislation suggest that a low level of family income or assets should not deter individuals who desire to attend postsecondary education. (However, "need-based" financial aid has the conceptual difficulty of bearing an uncertain relationship to individual preference and willingness to attend postsecondary education.)

Actual enrollments in postsecondary education result from the interaction of (a) individual decisions to apply and to attend and (b) institutional decisions to accept applicants. A large number of idiosyncratic factors are relevant to these decisions, such as interests, ability, experience, personality, and values--and should continue to be relevant with the exception of those factors judged by public law or policy to be inequitable

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[14] See Financing Postsecondary Education, Chapter 4.

or unjust as determined by legislation or court rulings. This concept gives us the possibility for developing a macro-measure for equity.

If we make the following definitions:

$x_1 \equiv$ the set of individual, institutional, public policy, and environmental variables which influence individual and institutional decisions, with the exception of those variables which by policy or law cannot be used to discriminate,

$x_2 \equiv$ the set of variables which by policy or law cannot be used to discriminate, and

$e \equiv$ the enrollment vector delineated by population subgroups as appropriate

then we can write the student demand (application) for admission function and the institutional supply (acceptance) function as:

$$fd\ (e, x_1, x_2) = 0 \quad \text{(demand function)}$$

$$fs\ (e, x_1, x_2) = 0 \quad \text{(supply function)}.$$

In equilibrium each year (or other time period), each of these vector valued functions must hold simultaneously, and

$$e = g\ (x_1, x_2) \quad \text{(reduced form)}.$$

We can then observe that equity in postsecondary education occurs when the discriminating variables (x_2) are irrelevant, that is when

$$g\ (x_1, x_2) = g\ (x_1, x_2') \qquad \forall x_2' \ C\ X_2$$

One necessary but not sufficient condition for equity is that

$$\frac{\partial}{\partial x'_2} g\ (x_1, x_2') = 0 \qquad \forall x_2' \ C\ X_2$$

In an analytical formulation of $g(x_1, x_2)$, this necessary equity condition can be easily tested from observable statistical evidence. This formulation would also readily yield a measure of excess demand (or supply)

and, on the assumption that one would not consciously reduce demand, a measure of the gap between actual enrollments and the potential enrollments at equity would be:

$$\text{gap} = \max_{x_2 \, C \, X_2} g(x_1, x_2) - e$$

This still leaves open the possibility of conscious public policy seeking "overrepresentation" of individuals in various aspects of postsecondary educations--such as the focus in science and engineering after Sputnik or the current environmental and energy focus, or stimulating the enrollment in postsecondary education of individuals with nontraditional preparations.

In summary, equity in public policy toward individual demand in postsecondary education consists of two factors: (a) a recognition that certain variables cannot be used to discriminate against individuals; and (b) partly as a result of public policy, actual resulting enrollments should not be a function of these discriminating variables. The implementation of the nondiscrimination factor requires legislation and/or court enforcement. The implementation of the positive behavioral factor requires creative, imaginative, and effective public programs.

Effectiveness of Public Policy Instruments

While equity has been a major objective of public policy's concern about individual demand for postsecondary education, it has not been the only

objective of public involvement. National Direct Student Loans, NSF fellowships and traineeships, the G.I. Bill, and EPDA fellowships have all served special purposes beyond equity. The existence of multiple objectives for public policy means that the evaluation of the effectiveness of public policy instruments in achieving these public objectives will probably be difficult and imprecise. In mid-1974 there are many manifest problems, such as the inadequate funding of Basic Educational Opportunity Grants, and the almost complete absence of any form of financial aid for adult continuing education. It is not the purpose of this paper to evaluate the effectiveness of the various public policy instruments--federal and state governments already devote a large effort attempting to do this very task. Rather, it is my intent to present a broad formulation which raises some basic questions about the effectiveness of public policy instruments in influencing individual demand for post-secondary education.

To begin with, we should consider the generic forms of delivery of public support provided individuals: grants, loans, work, and tax credits. These delivery mechanisms can be further subdivided depending on whether the funds are distributed on the basis of need, ability, prior government service, or whatever, In addition, we should consider institutional characteristics, such as tuition, student aid, program offerings, and program quality, which affect individual attendance decisions and which may be affected by public financing decisions.

A variety of studies have been conducted of young people's choices of entering and remaining in postsecondary education.[15] While substantially different samples of student behavior were observed by these various studies, most of the studies of the demand for postsecondary education found the following variables (among others) to be significantly statistically correlated with student enrollment choices: individual academic achievement, secondary school curriculum, price of attending postsecondary education, institutional (or fellow student) academic achievement,

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[15]There has been some empirical research on individual demand and virtually no empirical research on institutional supply. Some of the individual demand literature is: R. Campbell and B.N. Siegel, "Demand for Higher Education in the United States," American Economic Review, Vol. 57 (June 1967), pp. 482-494; A.J. Corrazzini, et al., "Determinants and Distributional Effect of Enrollment in U.S. Higher Education," Journal of Human Resources, Vol. III, No. 1 (Winter 1972), pp. 39-59; Herbert J. Funk, "Price Elasticity of Demand for Education of a Private University," Journal of Educational Research, Vol. 66, No. 3, November 1972, pp. 130-134; Stephen A. Hoenack, "The Efficient Allocation of Subsidies to College Students," American Economic Review, Vol. 61 (June 1971), pp. 302-311; Stephen A. Hoenack and Paul Feldman, "Private Demand for Higher Education," Economics and Financing of Higher Education in the United States, Joint Economic Committee (1969), pp. 375-398; Stephen A. Hoenack, W.C. Weiler, and Charles C. Orvis, "Cost-Related Tuition Policies and University Enrollments," mimeographed (Management Information Division, University of Minnesota, 1973); Walter Miklius, Moheb Ghali, and Richard O. Wade, "Probable Effects of the University of Hawaii Tuition Changes," mimeographed (Economic Research Center, University of Hawaii) October 1972; Leonard S. Miller, "Demand for Higher Education in the United States," unpublished paper presented to the National Bureau of Economic Research Conference on Education as an Industry (June 1971); David Mundel, C. Manski, and Meir G. Kohn, "A Study of College Choice," unpublished paper presented to Econometric Society Meetings (December 1972); R. Radner and L.S. Miller, "Economics of Education: Demand and Supply in U.S. Higher Education: A Progress Report," American Economic Review (May 1970), pp. 326-334.

instructional program characteristics, and parental education, occupation, wealth, and income. There is significant intercorrelation among many of these variables, such as family education, occupation, and income, and it is important for public policy to identify the (partial) effects of those variables which may be changed by public policy. In the very long run almost all individual, family, or institutional characteristics may be viewed as amenable to public policy--which is almost as much comfort as Keynes' maxim that "in the long run we are all dead." However, with a more realistic 3-5 year time horizon the price of attending postsecondary education is the most feasible leverage point for public policy.

We should carefully distinguish price subsidies, which are conditional upon and/or related to an individual's decision to enroll in postsecondary education, from income subsidies, which are independent of the recipients' decisions to enroll in postsecondary education. Basic grants, guaranteed student loans, veterans' benefits, and low tuition are examples of price subsidies because an individual does not receive these subsidies if he or she is not enrolled in an approved form of postsecondary education. Welfare and unemployment benefits are examples of income subsidies which are received whether or not an individual enrolls in postsecondary education and there is virtually no information on the proportion of these income subsidies devoted to postsecondary education. Parenthetically, the student-aid/low-tuition debate, in addition to questioning the morality of alternative delivery mechanisms, essentially questions the relative effectiveness of different strategies for price subsidies.

There is some public discussion of strategies related to variables other than price. According to some studies, if public policy could affect secondary school tracking policies or individual aspirations, these changes could significantly affect individual enrollment decisions.[16] For example, Talent Search, Upward Bound, and Special Services for the Disadvantaged all attempt to modify individual aspirations toward college attendance and to offset secondary school tracking policies. While some public and private programs do seek to intervene with nonprice variables and while it is difficult to quantify precisely this judgment, it seems to me that the preponderance of public support for postsecondary education is in the form of price subsidies either in the form of low tuition subsidies in public institutions, about $9 billion in FY 1972, or in the form of student aid, $4.2 billion--a combined price subsidy amount of $13.2 billion out of a total public involvement of $17.4 billion.[17]

One additional ramification of price subsidies is the public role in facilitating the capital market for student loans. Undoubtedly student loans would be available without government guarantees or direct loans--but purely commercial loans for students carry a high interest rate. The role of public policy has been to increase the supply to students of low priced loan money, which is just another form of price subsidy.

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[16] See Financing Postsecondary Education, p. 134.

[17] Ibid. p. 69. The remaining $4.2 billion is primarily grants and contracts for services or research.

With price subsidy the principal strategy for public intervention in the demand for postsecondary education, public policy makers should ask, "How effective are alternative mechanisms for delivering price subsidies in terms of affecting individual decisions to attend or to continue in postsecondary education?" Unfortunately, we have very little information with which to answer this question. No major study has estimated empirically the differential effectiveness of student grants versus student loans versus student work versus tax credits versus low tuition. Most of the empirical demand studies have focused on the effects of tuition on the probability that recent high school graduates will attend postsecondary education. The results of Miller-Radner, Hoenack et al., Corrazzini et al., Funk, and Miklius et al. are all in the range of a statistically significant 1% to 3% decline in enrollments for a $100 increase in tuition, with individuals from low income families slightly more responsive than individuals from high income families.

In other words, from the available evidence we would expect price subsidies through low tuition to have an effect on individual demand for postsecondary education--but the effect is small. Lowering tuition $100 would have a likely effect of increasing enrollments by 1% to 3%, which implies that $3,000 to $10,000 in additional subsidy would be needed for each additional student attracted to postsecondary education.

Therefore, a policy of low public tuition is likely to be an effective, though not necessarily efficient, way of influencing individual demand for postsecondary education. In the absence of more complete data we

cannot judge the efficiency of a low tuition policy relative to other delivery mechanisms. However, we can observe that effecting changes in individual demand for postsecondary education through low tuition will probably be a far more expensive undertaking than most policy makers realize.

While price subsidies through low tuition may be effective in the aggregate, tuition is a blunt instrument in the achievement of equity because tuition essentially does not differentiate among students on any basis beyond full-time/part-time and possibly undergraduate/graduate. On the assumption of approximately equal effectiveness of the same dollar change in lowering tuition or increasing student grants, an assumption which has not yet been established empirically, the inherent relative efficiency of targeted student grants versus general tuition reduction[18] has been advocated by many recent groups including the Carnegie Commission and the Committee for Economic Development. Still maintaining the assumption of equal (but opposite) effects of equal changes in tuition and student grants, the "Robin Hood" plan of the CED--taxing the rich (and middle income) through higher tuitions in public institutions to pay the poor through student grants for those who attend postsecondary education--is the most efficient plan of all those considered by the National Commission on the Financing of Postsecondary Education in achieving equity as measured by the limited indicator of income group participation.

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[18]See Financing Postsecondary Education, p. 310.

Just as there is often a confusion between price subsidies and income subsidies, there is often a corresponding confusion between enrollment price responsiveness and enrollment income responsiveness. Empirical demand studies have been quite consistent in their findings of price responsiveness, as we have just discussed, with enrollment probabilities decreasing when the price of education increases and with the magnitude of price responsiveness decreasing with increasing family income. While individuals from middle- and upper-income families enroll in postsecondary education in much greater proportion than individuals from low-income families--suggesting a positive income responsiveness--careful statistical studies show a mixed pattern. In fact, most of the studies are based on samples which do not show changes in parental income over time; individuals were usually classified by their parents' income at the beginning of a longitudinal study and parental incomes were usually not monitored during the study. The dominant pattern in enrollment income responsiveness is one of weak positive association between parental income and individual demand to attend postsecondary education.[19]

We must be very careful not to conceive of the effectiveness of public policy instruments solely in terms of technical efficiency; it is also important to consider the role played by morality. Many policy makers feel that it is "unfair," "unjust", and possibly "immoral" for individuals

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[19]As Christensen, et al. (1972) conclude, "Neither males nor females are seriously influenced by the family's income position when deciding for or against college attendance." Sandra Christensen, John Melder, and Burton Weisbrod, "Factors Affecting College Attendance" (mimeo, Institute for Research on Poverty, University of Wisconsin, July 1972).

from poor families (one never uses "low income" to describe "poor" when morality is the issue) to pay the full cost of their education. Perhaps this is because some policy makers view postsecondary education as a merit good which people should have independent of their willingness to pay for it. Similarly, some believe that individuals simply should not complete postsecondary education with substantial debt. For whatever reason, questions related to delivery mechanisms are often moral issues to be resolved by the political process, rather than technical issues to be resolved by analysis.[20]

Where does all of this leave us? As equity increasingly becomes perhaps the central policy issue in individual demand for postsecondary education and as wage earning adults are increasingly perceived to be the major constituency of postsecondary education, I believe the morality of funding mechanisms will become increasingly less important and the efficiency and effectiveness of public policy instruments will become increasingly more important considerations. This is not to argue that our society should have less moral concern for adults than for youth, which I do not believe, but that in addition to a concern for the equity of results, public policy should be concerned with the effectiveness of public policies and not the morality of loans versus grants. Currently we know very little empirically about the relative efficiency of different public policy instruments and this area needs a great deal of additional research.

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[20]"The public often makes up its mind more on what it perceives to be right, regardless of historical precedent, legal argument, and even hard fact to the contrary." Robert C. Andringa, "New Demands by Government for More Information from Postsecondary Education," paper delivered at 2nd National Forum on New Planning and Management Practices in Postsecondary Education, Chicago, Illinois, November 1973.

Division of Responsibility

The third vexing concern of public policy toward individual demand for postsecondary education is the appropriate division of responsibility for the financing of postsecondary education. The share of the total cost of postsecondary education borne by each participant is the result of a particular historical process: almost every state has a different pattern for the division of responsibility for undergraduate and graduate education; a great many of the adult and continuing education programs are self supporting or only modestly subsidized; and the profit-seeking proprietary institutions have rarely received any public support. The organized research mission of postsecondary education has been largely federally financed, but in the tangled web of shared resources and multiple products there is no neat division of responsibility in the research program. With almost 78,000 institutions and organizations providing postsecondary education with tens of thousands of different financing arrangements, it is difficult to generalize about the appropriate division of responsibility.

However, there are several simple observations which might illuminate this discussion. The first observation is that people usually do not complain about the cost of a good or service unless either the perceived cost becomes high relative to the perceived benefits or there is some expectation that the cost can be lowered through public complaints. It is unclear whether the current interest in the appropriate division of

responsibility arises out of public disappointment with the apparent benefits or public dissaffection with rising costs of postsecondary education. Independent of the apparent benefits of postsecondary education it seems reasonably clear that costs to the public and to the individual are going to continue to increase. As Table 6 shows, during the 1960s the public costs for higher education, which receives the vast majority of public postsecondary educational institutional support, increased almost twice as rapidly as enrollment (12.4% per year versus 7.8% per year) and the USOE forecasts that this trend will continue for the 1970s, with public costs increasing at 5.9% per year versus 3.2% per year increase in enrollments.[21] Meanwhile, all nonpublic costs

Table 6

Past, Current and Forecasted Enrollments and Expenditures in Higher Education

	1961-62	Average Annual Rate of Change	1971-72	Average Annual Rate of Change	1981-82
Enrollment (million)	3.86	(7.8%)	8.12	(3.2%)	11.11
Public Exp I&R $ (million)	$3.1	(13.9%)	$11.4	(6.7%)	$21.9
Total Current Pub (million)	5.3	(12.4%)	17.1	(5.9%)	30.5
Nonpublic I&R (million)	2.3	(8.5%)	5.2	(3.4%)	7.3
Nonpublic Total Current	4.4	(7.8%)	9.3	(3.5%)	13.1

Source: Projection of Educational Statistics, Government Printing Office, 1973, DHEW (OE) 73-11105.

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[21] Projection of Educational Statistics, Government Printing Office, 1973. This percentage increase in enrollments forecasted for the 1970s is almost twice other enrollment projections by the Census Bureau and the Carnegie Commission.

(including tuition and fees) have increased and are forecasted to continue to increase at the same rate as enrollment. In other words, according to USOE analysis and forecasts, public costs of supporting institutions of higher education have increased and will increase about twice as fast as nonpublic costs--thus, the share of institutional costs of higher education borne by the public may well grow for 20 years. This prospect alone may explain some of the visible public concern for the appropriate division of responsibility.

The second observation is that each individual or organization providing financial support for postsecondary education views its role as marginal--as opposed to responsible for base funding. As costs continue to rise, as the tuition and fees paid by students continue to increase, and as the focus on the division of responsibility intensifies, the degree to which each participant sees his or her role as marginal will probably increase also. This in turn will lead to increased demands for cost analysis to prove that one is not paying more than his or her marginal share. The financial stability of multiple-function organizations, such as major research universities, is particularly sensitive to this marginal thinking because of the extensive interrelationships among the various activities of the organization. However, all postsecondary institutions, with the exception of proprietary schools, are susceptible to the downward spiral of support engendered by marginal thinking.

The third observation is a logical extension of marginal thinking: namely, costs of postsecondary education should be borne in proportion to the benefits received from postsecondary education. The determination

of the magnitude and distribution of the benefits of postsecondary education have so far eluded calculation. In the past decade, human capital theorists and empiricists have estimated the rates of return to various levels of education.[22] Others have interpreted residual rates of economic growth as attributable to various levels of education.[23] The Carnegie Commission has estimated judgmentally that the benefits of higher education are distributed two-thirds to the individual and one-third to the society.[24] They then go on to argue that the same distribution should be applied to the total costs of higher education, where total costs include the opportunity costs of individuals but not of society.

The question of the appropriate division of responsibility for financing postsecondary education is a bargaining question, not an analytic one. A careful analysis of benefits of postsecondary education to each of the major actors could be used to set a logical upper limit of the amount each actor should pay but, assuming total benefits exceed total costs, the minimum one can politically manage to pay is a highly negotiable amount.

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[22]See Gary S. Becker, Human Capital: A Theoretical and Empirical Analysis, National Bureau of Economic Resources, 1964; Richard Eckhaus, Estimating Returns to Education, McGraw-Hill, 1972, and Theodore W. Schultz, W., Investment in Human Capital: The Role of Education and of Research, Free Press, 1971.

[23]Edward F. Denison, The Sources of Economic Growth in the United States and the Alternatives Before Us, CED, 1962.

[24]Carnegie Commission, Who Pays? Who Benefits? Who Should Pay?, McGraw-Hill, 1973.

However, the establishment of tuition policies, which determine the share of financial responsibility to be borne by individuals, should reflect at least an examination of the various benefits of postsecondary education to ensure that individuals are not charged an amount totally incommensurate with what they receive.

IMPLICATIONS FOR RESEARCH AND INFORMATION

The value of information for policy making should be determined by examining its actual effects on decisions. Unfortunately for data gatherers, decision contexts change rapidly, which means that the utility of particular data elements also changes rapidly. The kinds of research and information on individual demand for postsecondary education that will be needed by policy makers in the next 5-10 years will depend upon the context for future decisions about postsecondary education and the extent to which "steady state" of individual demand for enrollment is an inappropriate assumption for that future context. Although one cannot anticipate exactly the specific decisions public policy makers will confront in the near future, I have suggested that the procedural concerns of public policy relative to individual demand for postsecondary education will include: the equity with which postsecondary education and public programs financially supporting postsecondary education are accessible within our society; the effectiveness of public instruments in accomplishing public objectives; and the division of responsibility for postsecondary education among the various financing sources.

To the extent these suggested future decision contexts and concerns are accurate, they can be used to identify the types of research and information that may prove to be relevant for policy in the coming years. The following paragraphs sketch research areas which seem to me to be likely to yield information that would affect decisions in the three suggested policy areas.

1. Expanded view of postsecondary education.

   NCES has begun a survey of the noncollegiate sector and it certainly should be continued. Researchers should be encouraged to expand their horizons to include adult continuing education, nondegree credit activities in collegiate institutions, and the noncollegiate sector. A comprehensive reporting format should be developed for presenting postsecondary education participation.

2. Individual demand functions for postsecondary education.

   The current empirical work should be extended to adult demand for all forms of postsecondary education. Perhaps the Ohio State Census sample could be used for this. Certainly the high school cohort studies are much too limited to be of great utility in the expanded view of postsecondary education, although they continue to be useful in the collegiate sector. These demand estimates should include the impacts of all viable public policy instruments including grants, loans, work, tax credits, income subsidies, and tuition.

3. Institutional supply functions for postsecondary education.

   Institutional acceptance and other decisions are very poorly understood in the collegiate sector and largely unexamined beyond the collegiate sector. The presumption of infinite

elasticity of supply should be critically questioned in these times of perceived financial distress--much of which distress can be linked to institutional student aid deficits.[25]

4. Reduced form equations for enrollment.

   The explicit recognition of individual demand and institutional supply of student spaces would enable both analytically sound enrollment projections and the development of a macromeasure of equity in individual demand.

5. Relative efficiency of public policy instruments.

   Drawing upon the individual demand function results, one should be able to analyze the relative efficiency of public policy instruments.

CONCLUSION

The constant reexamination of traditional collegiate higher education has focused on declining rates of youth participation, increasing costs, stagnating institutions, and generally increasing dissatisfaction. As we expand our view to the participation of adults of all ages in postsecondary education of all forms, we are led, I believe, to substantively different conclusions. The broader landscape of postsecondary education is experiencing strongly increasing demands in professionally relevant areas and there is apparently even more interest in adult participation than institutions realize.

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[25] Financing Postsecondary Education, pp. 202-209.

These forces for growth and new programs for newly recognized clientele will accentuate a number of major questions of public policy responding to concerns of the equity with which postsecondary education is accessible within our society, the effectiveness of public policy instruments in accomplishing public objectives, and the division of responsibility for postsecondary education among its many supporters. This paper presents some notions of what equity is and is not and how it might be defined operationally, of the issues and evidence on the relative effectiveness of alternative public policies, and of some of the pressures on the division of responsibility.

As always, far more remains unknown than policy makers would prefer and this paper suggests some important research questions than can be defined within the policy considerations of individual demand for postsecondary education. The choice of context and breadth of vision will largely determine the utility of additional research on individual demand for postsecondary education.

ACKNOWLEDGMENTS

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RESPONSE

by

Leonard S. Miller

Dr. Miller is an Assistant Professor at the School of Social Welfare, University of California, Berkeley. He has recently completed a book, co-authored with Roy Radner, ***Demand and Supply in United States Higher Education,*** *Carnegie Commission on Higher Education, McGraw-Hill, 1975.*

Answers to questions like "What are the consequences of alternative public policies on the distribution of enrollment in higher education institutions?" have lives of their own. Sometimes forgotten or formerly unconsidered parts begin to appear germane and the analytical focus ought to be broadened. For example, Weathersby spends about one-third of his paper discussing the fact that we ought to be thinking about the demand for a much broader set of educational experiences than those suggested by the traditional collegiate model. Although the boundaries are not clear, he quotes National Commission figures which show that adult and professional-trade-employment oriented learning experiences have reported enrollments of roughly 200% and 20% respectively, of the traditional collegiate sector's enrollment. Weathersby goes on to suggest that a middle-aged industry, primed by a score of golden years and presently facing a decade of demand constraint ahead, might take solace from this newer, less recognized, and potentially important market ahead.

Programmatic change seems to be called for. This applies to the broader adult-based demand, and to the more traditional youth demand as well. In our analysis of 1966 SCOPE high school seniors, Roy Radner and I found a rather interesting behavior pattern among students in the lower half of the SAT distribution, (students scoring under 400 points). We found that the higher the academic achievement of a student in this group, the less likely it was that he or she would attend a higher education institution that was characterized by a student body with higher average academic abilities. Elsewhere we have interpreted this result to mean that students who have experienced relative academic failure want something different from their educational experiences, something unlike the academic experience. Perhaps they want more technical and employment-oriented training. The question becomes, will necessity (declining future demand) force the higher education system to do a job it has not done well before?

Weathersby's second key issue relates to equity considerations. What could be more equitable at this time than to have a set of policies that would result in a useful postsecondary school educational experience to those who have least benefited from our present school system?

To learn enough about the system to construct such a policy, I believe it will be useful to maintain the analytical difference between our 3,000 or so higher education organizations and the other organizations providing adult educational experiences. Basically I have two reasons for holding this view. The first has to do with our present knowledge about higher education demand.

I hoped my example relating to low academic achievers would suggest that national student goals like access, choice, and opportunity may at this time have more to do with demand factors we are not discussing than with demand factors we are discussing.

After a few starts on the demand problem, it was rather clear that the basic issue to be solved was how characteristics of one option would affect the probability of selecting all the other options. This problem, technically called the problem of joint dependency, was solved by Daniel McFadden in 1967. The technique, which McFadden called conditional logit estimation, required knowledge of the options available to a chooser, and the chooser's best choice. The choosers and their options had to be sufficiently described as well. In the latter half of 1968, the year following McFadden's establishiment of the analytic capability of making joint demand estimates, Radner and I, proceeding much in the spirit of the focus of this seminar, were fashioning our first freshman demand estimates for the State of California out of a combination of available data and brute force.

The two principal data problems we had were that we did not know the actual options an individual was choosing, and we did not have a sufficiently adequate description of those options. I have earlier suggested one of the dimensions of description that may be important: work-oriented options versus academic-oriented options. I also have in mind such basics as tuition charges, amounts of grant aid, loan aid, and work opportunities that accompanied the options individuals actually faced.

Our study had somewhat primitive solutions to those problems. Kohn, Manski, and Mundel had somewhat more sophisticated solutions. Ghali, Miklius, and Wada, studying the higher education demand in Hawaii, had a somewhat confined population. Given the uniqueness of their situation, they may have the truest answers. But, it is now six years later, the first generation of experiments has been completed, we are all aware of the deficiencies of these experiments, we have all learned a great deal in the process, and we would like to make estimates appropriate to policy models. But, to my knowledge, we have not collected a single data set appropriate to the conditional logit method. I agree with Weathersby's statement that "A large number of idiosyncratic factors are relevant to (enrollment) decisions..." and let me add that we do not have a very good idea of what they are. But even more important when designing a set of policies that might result in meeting national objectives, a large number of systematic factors are relevant to enrollment decisions and we do not have a very good idea of what those factors are either.

Where the question of demand is concerned, I am afraid that you have yielded the floor to a person who believes that the focus of this seminar, "determining those components of the fundamental questions which can be tackled, however imperfectly, with existing data and analytic capabilities," is somewhat misplaced. We have been tackling the problem imperfectly for quite a while; now it is time to begin the next generation of experiments with a proper data base. Indeed, we cannot hope to begin on Weathersby's third key issue, assessing the effectiveness of alternative forms of support for postsecondary choices, without this effort.

The second reason for maintaining the analytical distinction between higher education institutions and other postsecondary school educational experiences has to do, naturally enough, with supply. Before any solace is taken from the potential adult market ahead, we ought to ask whether higher education orgainzations have the capability of responding to this demand.

What amount of resources in the higher education system presently is devoted to this broader demand?

What amount of resources would be needed to handle Weathersby's expected demand?

What is the organizational capacity of these institutions to make the changes?

Will the programmatic changes that these institutions make be directed at the broader adult population, or will they be directed at providing a more relevant educational experience to the 18-22-year-olds presently avoiding the higher education system?

Unfortunately, we only have poor guesses for answers; very little is known about the supply behavior in the existing higher education system, as it is a problem which is still in its infancy.

For about a year now I have been completing a paper titled "College Admissions and Financial Aid Policies as Revealed by Institutional Practices." It is one of the first analytical statements of how admissions and financial aid practices at individual institutions can be studied. That paper will eventually contain results based on two data sets. The first set was collected during 1970. Radner and I were able to dovetail our interests in the supply problem with the College Scholarship Service's interest in evaluating the financial aid system they had created. Based on our early work on the problem, we designed a single set of data appropriate to CSS's needs and our own anticipated needs as well. As it turned out, that data base, focusing as it did on individual applicants, was extremely difficult to collect and the results yielded by that effort can only be interpreted as a beginning.

A more recent data set became available because the Office of Academic Planning at Stanford University saw it in their best interest to study Stanford's admission and financial aid behavior. So, in the end, our analytical efforts, their tooled-up data base, and mutual self interest are providing the most accurate estimates for the supply behavior model.

To recapitulate, hardly an opinion, let alone a consensus, has emerged on our way to solve the supply problem. It is likely that until such a consensus emerges, coordinated efforts with individual institutions will serve as the model for how supply behavior analysis can be accomplished in the near future.

If, or until, Weathersby's broader notion wins out, many of us will continue to be apprehensive. And how any of this will relate to the specter of competition among institutions for the higher academic achievers in the years to come is all beyond me. One nightmare I had pictured each individual private institution pitted against the others; it pictured the entire public sector pitted against the entire private sector. Economic clout was the main competitive weapon. Grant-issuing ability helps determine the victors in the private sector; lower relative prices keep the public institutions competitive. Through this rather disharmonious period the entire industry loses relative to industries which present more united efforts to secure support. All educational purposes have been made relatively worse off.

The reverse of this dismal picture is possible too. There is the dream where analytical models are useful in securing industry-wide agreement and in promoting interinstitutional trust through the open sharing of information, plans, and behavior. In that dream the political power of the educational purpose is enhanced and all educational purposes are made better off.

RESPONSE

by

Virginia Y. Trotter

Dr. Trotter was named recently to the nation's top education post, Assistant Secretary for Education in the Department of Health, Education, and Welfare. Prior to that appointment, Dr. Trotter was Vice Chancellor for Academic Affairs at the University of Nebraska at Lincoln.

During World War II, I recall an incident involving a cross-country train trip during which the person next to me asked the conductor how much behind schedule we were. The conductor replied, "Five hours." About an hour or so later, a person across the aisle asked the same question, and the conductor replied that we were "right on schedule." Incredulous, I asked how we could make up five hours on the schedule in scarcely an hour, to which the conductor casually replied, "Oh, we just changed the schedule."

It seems to me that both the National Commission on the Financing of Postsecondary Education and the conference paper have "changed the schedule" and by a neat bit of semantics have papered over the severe problems of colleges and universities by emphasizing "postsecondary education." This is comforting to those heretofore excluded from the discussion, and may in fact be a useful addition to the lexicon of education, but it does tend to obscure the problems collegiate institutions have.

I do not have complete data to discuss all of the statistics used to estimate the market for adult and continuing education. But I do, later in this short response, want to discuss what I feel are some concerns about the various market estimates.

It is correct, of course, to emphasize that the collegiate sector is currently primarily engaged in occupational, professional, and two-year terminal programs. It is wrong to assume that American higher education policy has been based on the premise that liberal arts education for youth is the dominant form of American postsecondary education.

Only the most pristine humanist would contend that liberal arts are nonvocational, and in most universities those in liberal arts programs are very vocationally oriented--only the vocations differ. In my own University of Nebraska, for example, the Arts College is the largest by far--some 60% of the credit hours are taught there. But this is a misleading figure if one were to infer that most students at the University are nonvocational. For example, even in areas such as history, fewer than a third of the students are history majors as such--and those who are certainly view history as a vocation.

My point is simply that expansion of traditional higher education through all of the various federal policies--NDEA, G.I. Bill, Higher Education Act, and so forth--was never to my knowledge predicated on the policy assumption that liberal arts was major activity. Indeed, I am not certain that liberal arts were ever fully nonvocational. Cotton Mather, in his history

of Harvard College, quotes the formula for awarding a Harvard master's degree as follows: "I admit you to the second degree in Arts..... with the privilege of practicing a profession whenever you are called upon to do so." University and college curriculums have long ago recognized that the professions required more than the liberal arts, and so has national policy.

There is, no doubt, some expanded market for adult education, but I think we must treat the currently estimated adult registrants in adult higher education with considerable scepticism as a base for thinking about the potential. The University of Nebraska, for example, reports some 300,000 such registrants--and this is correct. But these certainly do not represent individuals, and the number includes an almost endless array of registrants in short courses, institutes, and seminars, many of whom were merely housed and serviced at our Center for Continuing Education. I suspect the same is true for other institutions. So the base figure may, in fact, be overstated, not understated.

The University of Nebraska has been awarded nearly one million dollars to plan a program that would broadcast college courses by educationl television to persons prevented by family obligations, distance, or ill health from attending on-campus classes. One market survey undertaken as part of the planning process estimated that more than 200,000 people would be interested in the courses that would be offered--including low-income residents of urban areas who want basic English, mathematics, and

reading instruction, young people who need career-oriented courses, and elderly persons interested in enrichment courses in art, music, and the like. While this represents an important segment of the population and a large number of people in absolute terms, it is only 1.5 to 2 percent of the total population. Another survey estimated a larger number of potential participants (up to 12 percent of the total population), but determined that interest would drop sharply if as much as $50 was charged for courses. Further, the marketing surveys found that, in their judgment, a considerable amount of "selling" would be required.

But even assuming that a major market exists for postsecondary education as the National Commission has now defined it, and many competent observers such as Chancellor Gould and the Commission on Nontraditional Study agree that there does, the question remains as to whether or not this is a cause for rejoicing among the collegiate institutions. This may prove to be a proper role for us, but retooling to fill it will not be an easy or inexpensive process.

I agree that most collegiate-level education is vocational, and virtually all noncollegiate postsecondary education is vocational, but in public policy planning one must assess not only the supply of students and how education fiscal policies affect that demand, but also the educational demands which will be, or can be, created by noneducational government policies. Higher education is very sensitive to economic currents--when engineering job opportunities declined, enrollments declined, and as job opportunities improved the enrollments began to improve also. We

see the same thing in teacher education. Higher education fiscal policies which are tuned merely to the student wave length will be very short-sighted as national policy. A national policy also should make certain that institutions themselves remain strong so as to be in a position to respond to future national needs which are most difficult to predict with a high degree of accuracy. We must also be very careful about any kind of education that does not include student exposure to more than a narrow job orientation. Finally, I am delighted that the paper has placed the matter of proportional funding of higher education among various segments of society back where it belongs--"as a bargaining question, not an analytic one."

Three major public policy issues for postsecondary education are listed: equity of access, effectiveness of policy in accomplishing public objectives, and the division of financial responsibilities for support of postsecondary education. To this I would add at least one additional question--the societal importance of alternate kinds of postsecondary opportunities.

DINNER ADDRESS

by

THE HONORABLE JOHN BRADEMAS
United States Congress

I am delighted, for several reasons, to have been invited to address this National Invitational Seminar of the National Center for Higher Education Management Systems.

First, of course, I am immensely pleased to see again the capable and hard-working director of NCHEMS, Ben Lawrence, who served so well as Executive Director of the National Commission on the Financing of Post-secondary Education.

Second, I am pleased to greet again the Commission's Research Director, George Weathersby, who is now a member of the faculty of the Harvard Graduate School of Education, whose Visiting Committee I chair.

Third, I am glad to acknowledge in his presence the outstanding contribution to the work of the Commission of my friend and colleague, Congressman John Dellenback, of Oregon.

Finally, I appreciate the opportunity to be able to press upon you what has been a major concern of mine for some time, namely: the need for the higher education community to pay more systematic attention to its own operations.

Indeed, I think it imperative that there be more meetings such as the one we are attending today. For it is not too much to say that if the problems of higher education are to be solved, we the politicians and you the educators and analysts will have to begin engaging in systematic and continuing dialogue.

For the more I remain in Congress, the more I am convinced of the wisdom of Lyndon Johnson's observation: "My problem is not so much doing what is right as knowing what is right."

In connection with the dialogue of which I speak, I think it significant that we meet against the background of two recent developments.

First, in 1972, Congress approved the Omnibus Education Amendments, potentially the most important higher education legislation since the Land Grant College Act was enacted under President Lincoln.

1972 Amendments

The '72 Act extended all the then existing major programs of assistance and added two brand new ones: (1) Basic Opportunity Grants, based on need, to ensure that no qualified student be denied access to an education; and (2) general institutional aid to colleges and universities, money to be expended as they determined, without earmark.

We have a long way to go fully to implement the intent of Congress in these two programs, but the framework of Federal policy for higher education is there.

Numerous Studies

The second factor I think directly relevant to our subject tonight is that within the last six months there have been published a series of reports by national commissions aimed at various aspects of higher education. I refer to the reports of the Carnegie Commission on Higher Education, Committee for Economic Development, National Board on Graduate Education, National Commission on the Financing of Postsecondary Education, and the Newman Task Force's second report.

Because our topic is obviously a canvas too large to paint in a few minutes, and because I served as a member of one of these commissions, I want to talk to you about the work of that group because the report of the National Commission on the Financing of Postsecondary Education raises, in my judgment, issues crucial to the future shape of higher education in this country.

The National Commission on the Financing of Postsecondary Education was established by the 1972 Act as a 17-member group: 13 appointed by the President, and 4 from Congress, 2 Senators and 2 Representatives, one of each party.

I was the Democratic Congressman on the Commission; John Dellenback, the Republican.

Why the Commission?

I think the answer is fairly straightforward.

Failure of the Education Community

Members of Congress who worked to write the Omnibus Education Amendments of 1972 felt enormously frustrated in our failure to obtain from the higher education community thoughtful, reasoned analyses to enable us more effectively to deal with the issues with which we were wrestling, especially the question of the appropriate basis on which to channel general aid to institutions.

We were, to be blunt about it, mightily distressed by the failure of the American education community to pay serious intellectual attention to the economics of higher education.

Most of you in this room are aware of the several reports of recent years contending that many of our colleges and universities were in deep financial distress.

But when our committee in the House of Representatives attempted to find a definition of "financial distress" or even "financial need," our inquiries fell on stony ground.

For there are few commonly accepted standards of economics in higher education. And while simply to state the problem is not to solve it, educators must realize the dangers for the future financing of higher education in the continued absence of more systematic study of such problems by the scholars.

National Commission's Approach

Those of us who sat on the National Commission on the Financing of Postsecondary Education accordingly worked not to fashion a laundry list of legislation Congress should pass to help postsecondary education; rather we set for ourselves a far more formidable but, in my opinion, a more constructive path, that of developing an analytical framework within which, hopefully, those who make decisions about postsecondary education--Congressmen, Governors, state legislators, administrators--can more soundly, more rationally, if you will, decide.

In short, we attempted to build an intellectual construct for looking at postsecondary education and to do so from first principles.

So the first task our Commission had was to evolve a definition of postsecondary education.

After much deliberation, we agreed on a set of eight objectives for it. Here, in rapid summary, they are: student access, student choice among institutions, student opportunity, educational diversity, institutional excellence, institutional independence, institutional accountability to those who supply the funds, and adequate financial support to achieve the several objectives.

Our next step was to describe the operation of current patterns of financing postsecondary education in the United States and then to assess their impact on achieving the objectives we had earlier stipulated.

And because Congress specifically mandated an analysis of the incidence of financial distress among postsecondary institutions, we devoted a chapter to this subject.

The heart of our report, however, as I have already suggested, was our effort to delineate a framework for analyzing policies for financing postsecondary education.

So our Commission report is both an explanation of our analytical approach, which we call an analytical framework, and which we believed to be applicable to federal, state, and local levels of public decision making, and also an application of this analytical framework to the determination of national policies for financing postsecondary education.

Our analytical framework consists of the linking of ten major elements, and again, I list them for you briefly and ask that you realize that each of them is indispensable to the systematic development of this analytical approach. Here they are: objectives for postsecondary education; criteria to measure the achievement of objectives; a set of general financing policies to accomplish the objectives; financing mechanisms to carry out the policies; specific financing programs; an extensive data base for postsecondary education; a series of assumptions about the society and the institutions of postsecondary education; a method for estimating student and institutional responses to changes in financing; a set of measurements to describe the achievement of the objectives; and finally, a judgmental review of the financing mechanisms and programs in relation to the objectives.

Need for Greater Rationality

Obviously we on the Commission set ourselves a huge and difficult assignment but we felt, to repeat, that those who make policies for financing postsecondary education very much needed a comprehensive analytical framework to assist them.

I hasten to point out that our report was no prescription for some kind of new "national" system of postsecondary education.

Nor were we unaware of the pitfalls in attempting to quantify many factors which we realized are not easily, if at all, susceptible of quantification.

And I am aware, too, that even expressing a concern about the need for a more rational effort to link educational objectives with financing policy often raises the hackles of university administrators and teachers who commonly, and often inaccurately, charge the authors of such admonitions with wanting to quantify everything in higher education and to ignore the issue of quality and the need to exercise judgment.

To reiterate, the Commission did not suggest that we can measure all the problems of American postsecondary education with a slide rule, feed data into a computer, and read the printouts for solutions.

We proceeded rather on the assumption that, with respect to shaping policies to support the institutions that symbolize and advance reason in our society, we require a more systematic, more rational, if you will, effort to apply reason.

As Robert C. Andringa, of the staff of the House Committee on Education and Labor aptly put it, in commenting on the rising insistence on the part of Congressional policy makers on more accurate data and more reasoned analyses from the higher education world, "Did the intellectual community which first held the magnifying glass over tax inequities, industrial pollutors, excessive defense expenditures, and racial discrimination believe their own campus strongholds would forever escape similar scrutiny?"

And I would here also note that we on the Commission did not assume that our report would be the last word on this matter; rather we intended that our proposals and analyses would stimulate the most searching dialogue across the country on the part of all those concerned with post-secondary education and, of course, particularly on the part of educators.

Now although I speak as a Member of Congress and of a commission which focused particular attention on the effect of federal financing on post-secondary education, I do not want to suggest that the future of American higher education depends solely on federal money.

As Stephen R. Graubard has elsewhere warned, quite wisely in my view, there is a feeling on the part of too many colleges and universities that the fate of their institutions depends on who sits in the White House and that only federal money will solve the major problems of American higher education.

Nonetheless, any enterprise as large and complex and important as American higher education will, in large measure, be shaped by the nature and amount of the public support it receives, particularly from the national government.

And, while the case for adequate support of our schools and colleges and universities may be self-evident to you and to me, I think you will agree, to put the point as gently as possible, that not everyone shares that faith.

We need, if we care to justify increased expenditures on education, at every level, the most thoughtful, reasoned, honest analysis and the most telling arguments and evidence about education we can muster. Then I believe we can prevail.

Other Voices

Let me point out that there are many voices calling out for better research and analysis of the higher education community.

Dr. R. Peif, Professor of Physics at the Berkeley campus of the University of California, this month in Science Magazine, writes: "The educational mode of functioning of the university today is basically not very different from what it was 50 years ago."

And, he continued:

> Nor is this situation surprising, since the university, unlike any progressive industry, is not in the habit of improving its own performance by systematic investment in innovative research and development. Indeed, the resources allocated by the university to educational innovation are usually miniscule or nonexistent.

At a recent "Dialogue on Higher Education" sponsored by the Woodrow Wilson International Center for Scholars, the distinguished Polish sociologist, Jan Szczpanski, made a related point in very telling terms:

> Higher education, being as conservative as it is up to this time, will not be able to adjust quickly enough to the far more rapidly changing societies, technologies, and economic and scientific research institutions outside higher education.

It is then, I think, obvious that if we are to be able to plan rationally for our institutions of higher education in the years ahead, we are going to need better data and more informed analyses than we have had available in the past.

Congressional Needs

I must warn you that my own contribution to this discussion of "Visible Questions--Invisible Answers" will be offered from the perspective of a practicing politician, a legislator with responsibility for helping write the policies of the federal government in higher education.

Ben Lawrence has asked me, therefore, to speak to you about some of the kinds of decisions Congress will be making the next three years as well as about the kinds of information we will need in addressing those issues.

I must reiterate that, in my view, the fundamental problem facing policy makers and analysts--as the Commission learned--is that we have not yet developed a science of the economics of higher education.

Indeed, we have not yet even defined the basic elements of the economics of higher education.

Clearly then in my estimation, your first task is to press ahead with the development of such a science.

What does that involve?

First, of course, it will require the definition of basic data elements such as "full-time equivalent student."

Second, we must ensure that better data are collected, and that they are compatible and available on a timely basis.

Third, we are going to need the kinds of people who are trained to work with the new economics of higher education, people like Ben Lawrence and George Weathersby.

Let me now turn my attention to some of the legislation under the jurisdiction of the Education and Labor Committee on which I sit, and tell you how the development of such a science of the economics of higher education might help us in our work.

You and I know that the Education Amendments of 1972 are scheduled to expire at the end of the next fiscal year, 1975.

You might know, also, that the distinguished chairman of the House subcommittee with jurisdiction over federal assistance for higher education, James G. O'Hara of Michigan, has pledged to report a student aid bill out of his subcommittee before the summer ends.

Clearly Congress is going to be wrestling with some very difficult issues, if not this year, next year.

STUDENT AID

Take first the question of student aid. Very clearly the whole question of financial aid based on need is going to require the closest attention.

Let me tell you why. As you know, the Basic Opportunity Grant program is based not on income of the family, but on need, which is to say the amount of the grant is $1400 minus the amount the student and his family can afford to contribute.

But when the Education and Labor Committee last year asked several leading student assistance analysis centers to evaluate the financial situation of several hypothetical students, the answers we received indicated differences of as much as several hundred dollars in the amount of money the same student was expected to contribute to his education.

Clearly, without marveling at the obvious, such significant differences indicate the need for some fresh thinking in the whole area of financial need analysis.

Let me make two other points with respect to need analysis:

First, we must develop family contribution schedules that will appear to all to be fair and equitable, for I think families regard need analysis schemes much like income tax systems: as long as the system appears equitable, everyone will accept it.

And let me here add that the schedules we develop must be readily understandable to the informed layman.

A second point is that we need a new basic reevaluation of the relevance of need analysis techniques to the economics and realities of the 1970s.

For I suspect that in the not too distant future, a judicial decree may hold that for the purpose of determining the right to financial aid of the student claiming independence from his parents, the parents' financial situation is irrelevant.

In that event, need analysis as we know it will be a thing of the past--and federal, state, local, and institutional financial aid officers will need a new tool with which to fairly distribute their limited funds.

There are, of course, other questions relating to student aid:

(1) How successful in promoting access have been existing federal, state, and local student assistance programs. For example, who is now in post-secondary education who would not be without already existing student aid programs?

(2) If we expand existing aid programs and add new ones, what kinds of students will enroll, in what kinds of programs?

(3) Finally, what kinds of students are receiving composite packages of aid? For example, although we know what kind of student is receiving Supplemental Education Opportunity Grants or the Guaranteed Student Loan, we really do not have much idea of what kind of student is receiving both, along with a state award, and possibly a Merit Scholarship.

INSTITUTIONAL AID

Let me turn my attention now from student financing to institutional assistance.

I have already voiced my opinion that the fundamental problem we are facing is the need to develop the basic economics of higher education.

The sorry state of our knowledge in this respect was demonstrated by the National Commission.

This is what the Commission had to say about the question of institutional financial distress:

> There is no generally accepted definition of financial distress used in the postsecondary enterprise.
>
> And, the report continued:
>
> No generally accepted standards or uniform criteria are available to ascertain the existence or extent of financial distress among institutions of postsecondary education.

Surely it is not unreasonable for Members of Congress to demand uniform criteria or "generally accepted" definitions and standards of financial distress, if they are to be asked to direct public monies to institutions claiming to be in such distress?

Let me here say a word about a subject that has long concerned me.

Everywhere we turn, we hear of the miserable plight of the private college. But when we turn to the evidence supporting that contention, we find, again to use the words of the Commission, "no generally accepted definition of financial distress."

Let me here stress that I speak as a great supporter of the private institution. Indeed, I sit on the Board of Overseers of Harvard University and the Board of Trustees of American University and am pleased to represent the University of Notre Dame and Saint Mary's College, Goshen College, and other private institutions in my district.

But I believe that champions of private higher education must give far more attention than they have so far done to developing genuinely compelling arguments for the private institutions. For I predict that more and more, public officials will be asking why they should direct public funds to private institutions when it would seem to be less expensive to put the same amount of aid into public institutions and thereby help more students.

Categorical Programs

Finally, let me draw to your attention the many categorical programs for assisting institutions now under attack from the Nixon Administration.

You know, for example, of the concern that we are now experiencing an oversupply of well-trained teachers and professionals, and that, indeed, the job market is now "glutted" with Ph.D.'s.

As a consequence federal funds have been cut in many areas:

-- funds for basic research, training, and institutional support on the graduate level have been slashed;

-- special training programs in education, such as the Education Professions Development Act, are endangered;

-- special graduate training programs in such areas as personnel training for specialists for the elderly and the handicapped are under attack.

But you know, as well as I, that we have a long way to go with respect to forecasting, or measuring, personnel demands and needs.

I cite only one example: enactment of a comprehensive child development measure similar to the one I drafted, and Mr. Nixon vetoed, in 1971, could create a substantial demand for trained personnel now in very short supply--early childhood specialists.

The most careful attention therefore is in order for this whole question of the interrelationships between the marketplace and personnel needs, for the answers we receive could have an enormous impact on federal policies with respect to training in a wide variety of areas.

There are, of course, other issues of importance to policy makers which will require the most careful data collection and analysis.

Here are several:

-- methods of measuring productivity in postsecondary education;
-- pricing policies, particularly in the public sector, of postsecondary education;
-- the maintenance of vitality in the basic research conducted by our institutions of higher education;
-- the effects of making postsecondary education a lifelong undertaking and thereby expanding the pool of eligible students;
-- the consequences of new demands for accountability, and in particular demands for fiscal accountability.

That I have not covered these subjects in any depth is not evidence that I regard them as insignificant.

Rather, I have tried to concentrate on making the case that the future shape of the institutions that represent and incarnate reason in our society depends crucially upon the kind and quality of thought we bring to these institutions.

As a politician, I like to think that there is justification for the course I have chosen in the following words of President Woodrow Wilson in 1910.

Said President Wilson:

> ...the man who has the time, the discrimination, and the sagacity to collect and comprehend the principal facts and the man who must act upon them must draw near to one another and feel that they are engaged in a common enterprise. . .

The "common enterprise" in which, I like to hope, we should all be engaged is an uncommon effort to improve the institutions of postsecondary education in this country.

I look forward to working with you in that cause.

THE POSTSECONDARY EDUCATION ENROLLMENT SYSTEM: AN ANALYTIC FRAMEWORK

by

Marvin W. Peterson

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Without carrying the analogy to all of its logical extremes, among administrators the topic of enrollments in postsecondary education has reached an emotional level of concern not unlike the hysterical attempts of government, oil company, consumer, and other affected constituency spokesmen to explain how many barrels of what types of oil are available in some form or some location. In both energy and education, difficulties in defining the extent and nature of the problem and in identifying the appropriate data analyses, data elements, and data collection techniques are confused in a headlong search for quick and final answers. Hopefully, the purpose of this whole seminar and, more specifically, the perspective of this paper on postsecondary enrollments is to refrain from crisis solutions and to attempt to gain perspective on the nature and use of enrollment data. This paper, then, presents a tentative framework for a more comprehensive analysis of our increasingly diverse forms of educational enrollments and greater breadth of characteristics of learners in an expanding range of institutions and programs.

The concern is to establish a framework for enrollments and for enrollment data and reports that more nearly reflects postsecondary education, whether at the state, regional, or national level. In this spirit, this paper is more concerned with analysis than descriptions and with raising issues than providing answers--no policy position is advocated. While the perspective of the paper is on a state, regional, or national level, it is recognized that institutions may have more specific and differing needs for enrollment data and that institutions are often the

basic collection point. Further, the paper does not review existing enrollment patterns and does not reflect a thorough treatment of the adequacy of current data sources, collection techniques, and reports or studies--rather it outlines possible data uses and elements and identifies obvious gaps in existing data sources or exemplary studies. The principal concern is that enrollment data related to the functioning of postsecondary education are needed to enhance our understanding of that entity and can be useful, although seldom sufficient, in public policy analyses. Enrollment data are analyzed in the remainder of this paper (1) by looking at some evolving conditions that bring the enrollment issue into focus, (2) by examining the basic definitional and data element problems posed in measuring enrollment, (3) by developing a framework of the postsecondary enrollment system, and finally, (4) by relating enrollment data to policy issues in the functioning of the postsecondary system.

A CONTEXT FOR ENROLLMENT DATA: EVOLVING CONDITIONS THAT FOCUS POSTSECONDARY ENROLLMENT NEEDS

A brief discussion of some evolving conditions in postsecondary education is helpful in identifying the changing nature of postsecondary educational enrollments, some varied uses or purposes that enrollment data might serve, and some data element implications. (Table I highlights this brief discussion.) The first five are conditions which are dispersing

our definition of traditional higher education and, thus, its enrollment pattern; the final two are disparate attempts to deal with this dispersion in terms of new educational alternatives and new governance strategies.

Postsecondary Redefinition: The primary concern in dealing with enrollment data is the redefinition of "higher" to "postsecondary education" formalized by the 1972 Higher Education Amendments. The impact was not only to increase the numbers of institutions and programs (and students) eligible for federal support but also its requirement that states establish "1202 Postsecondary Planning Commissions." This redefinition has broadened the base of higher educational planning at state and federal levels by clearly including public and new private institutions (proprietary, nonprofit, and sectarian) which are both within and outside the traditional collegiate sector. It has further legitimatized our manpower concerns in occupational-vocational areas. In a sense it is a structural redefinition of education beyond high school more congruent with the needs of society. While there is still much controversy over the domain of postsecondary education, for the purposes of this paper, it is assumed to be those enrollees in the 2,948 "collegiate" and the 7,016 "noncollegiate" institutions included in the postsecondary finance commission's definition of postsecondary education (National Commission on the Financing of Postsecondary Education, 1973, p. 19).

TABLE I

ENROLLMENT DATA PURPOSES AND DATA ELEMENT CHANGES RESULTING FROM EVOLVING CONDITIONS

Evolving Conditions	Enrollment Data Purposes	Nature of Data Element Changes
I. Postsecondaryism/The Structural Change: Federal Redefinition 1972 Amendments 1202 Commissions	Describe new terrain Project new enrollment and funding needs	New institutional types New programs and fields New enrollment definitions New enrollee characteristics (age, educ. background)
II. Education as Service: Reduced "lock step" Legitimization of lifelong, leisure, and adult and continuing education all postsecondary institutions.	Describe changing patterns of attendance Changing notions of completion and success	New enrollee characteristics (age, patterns of attendance) New enrollment definition (continuing education unit) New temporary programs
III. New Constituencies: Poor academic backgrounds Low income Minorities Adult learners	To monitor access and retention To predict success	New enrollee characteristics (sex, race or ethnic background, academic background, family income)
IV. Credentialing and Testing: Griggs v. Duke Poser Credit by exam and competency-based learning Attention on selection criteria	Only "after the fact" accounting Resource allocation problem Predicting success	New enrollment definitions New instructional categories New enrollee characteristics (prior academic background and ability)
V. Enrollment and Financial Instability: Lack of enrollment growth Shifting public priorities Inflation	Describe shifting enrollment characteristics; potential pool Project revenues (institutional) or expenditures (govt. agencies) Resource allocation	New enrollee characteristics (family income)

TABLE I (Continued)

Evolving Conditions	Enrollment Data Purposes	Nature of Data Element Changes
VI. Alternative Educational Delivery Systems: External degrees Contract, modular, and competency-based curricula Technological delivery system	Describe new enrollment patterns Resource allocation	New enrollment characteristics (type of instruction)
VII. Planning and Management Dilemmas: Federal Planning v. Free Market Multiple funding sources Productivity and efficiency v. effectiveness	Enrollment projections--supply v. demand based Match enrollment data to funding source System performance indicators	Characteristics of enrollee or of policy and occupations Level of aggregation Enrollment data as measures of individual and system performance

The rationale for this domain is pragmatic. It includes institutions that are currently identifiable entities and from which enrollment data might be collected since the institutions have as an incentive the availability of federal funds. While enrollments in the "other postsecondary institutions" and "other learning opportunities" identified by the Commission are important, it is assumed that data collection on this broader base of "adult learners" would require special surveys (e.g., Carp, Peterson, and Roelfs), review of census tract data, and other unique data collection activities.

The impact of this redefinition can be seen in several ways. Considering all forms of formally or informally offered postsecondary education, estimates of the number of postsecondary or "adult learners" are diffuse, varying from over 43,000,000 estimated by the postsecondary finance commission (National Commission on the Financing of Postsecondary Education, 1973, p. 19) to nearer 90,000,000, estimated by a study at the Syracuse Policy Studies Center (Moses, 1971, p. 4). Using the postsecondary financing commission's definition of only "the collegiate and noncollegiate" sector eligible to participate in federal programs, higher education enrollments in 1972-73 are expanded less dramatically from 9.3 million to approximately 11 million (op. cit., p. 19). However, the crucial factor for a discussion of enrollments is not just the expanded numbers of institutions, of programs and opportunities, and of learners or enrollees that need to be described. The major enrollment

implications of this redefinition are the inclusion of many new types of institutions and new types of occupational and vocational programs of varied duration, of learners who have more diverse backgrounds than the traditional college student, and of some new definitions of enrollment which are discussed later. Further, the expansion by itself suggests that future funding patterns will have to reflect the increased or projected increase of enrollments eligible for public funds under the new postsecondary definition.

If postsecondaryism represents a structural redefinition of higher educational institutions and programs in relation to society, there is another sense in which higher education is being redefined as an institution that should respond to the needs of individuals or groups in society rather than just delivering traditional knowledge packages to traditional students. This is reflected in concerns about education as service and education for meeting the needs of new constituencies and new types of learners.

Education as Service: Three somewhat diffuse trends are redefining all of postsecondary education as a service. The first trend is a gradual demise of the "lock step" pattern of traditional collegiate education so loudly criticized by the first Newman Commission Report (1971). Recent enrollment data give evidence of this by portraying a more diverse age range than before among college students (ACE, 1973, p. 73.6).

Second, patterns of lifelong learning and learning for leisure are espoused even in traditional institutions (Hesburgh, Miller, Wharton, 1973). Completion of a degree program in a longer time span than that for which it was designed is less likely to be looked on as failure. Also noncredit instruction has gained many proponents. Third, and closely related, is the increased view of adult and continuing education as a legitimate postsecondary (rather than high school) function (Carnegie Commission, Toward a Learning Society, 1973). This is the result of several factors such as the larger portion of the population with secondary education credentials than in early decades, the increased attention given to inservice education by professional groups, employing organizations, and licensing agencies, and the increasing view of education as a public service or utility rather than just a credentialing agency. The impact of these three trends which are defining education as service is to blur distinctions of credit and noncredit offerings (see later discussion of the continuing education unit), to alter our assumptions about the age range and attendance patterns of traditional students, to make it more difficult to identify completion (successful or unsuccessful) points of one's education, and to legitimatize demands for new, often temporary, programs and offerings.

New Constituencies or Types of Learners: In addition to opening the postsecondary system to older students, three other interrelated dimensions currently enhance the redefinition of higher or postsecondary

education as it responds to new constituencies and new types of learners: the introduction of students previously thought academically unqualified (Cross, 1971), those with limited financial resources, and minority students (see: Carnegie Reports on Quality and Equality, A Chance To Learn, New Students and New Places, Women on Campus). The first two groups affect enrollment data primarily by raising questions about whether they can gain entrance and where they will succeed. This suggests focusing attention on identifying enrollees' academic qualifications and family income so that their entry and success can be monitored or predicted. The third group deserves further discussion as it represents a public policy shift from the 1954 Civil Rights Act requiring nondiscrimination to the 1972 Higher Education Amendments which stress Affirmative Action. Under Civil Rights legislation enrollment data by race and sex were not mandatory. However, under Affirmative Action guidelines they are needed either to establish the fact of nondiscrimination or to provide evidence of "good faith" efforts to reverse de facto past discrimination through affirmative action programs. The implications for enrollment data are the clear need for reports of enrollment at all levels by race or ethnic background and by sex in order to monitor entry and success, as well as academic background information to predict success.

Credentialing and Testing: The barrage of criticism aimed at the credentialing function in higher education has been growing once again. It has recently been focused by the 1971 Griggs v. Duke Power case

and recent renewed attacks on testing. In the Griggs case, the court held that employers, under the Civil Rights Act, may not use as a criterion for hiring a requirement (in this case a high school diploma or a general intelligence test) which is not significantly related to job performance and which disqualified minorities at a higher rate. The impact of this decision, if upheld in pending cases involving a college degree, is clearly to strengthen the case of those who argue that current academic credentials (degrees, enrollment credits taken, etc.), and perhaps the whole credentialing function, are inadequate. Already the growth of various credit by examination procedures for prior learning, for learning outside the traditional educational setting, and for completion of competency-based self-instructional materials have made inroads in traditional education, resulting in a few institutions based totally on such concepts (e.g., Minnesota Metropolitan, Empire State, etc.). Indeed, in many occupational areas program completion has long been based on competency-based measures. Several critical points for enrollment data are suggested. Degrees are less likely to represent completion. Enrollment may be expressed as competency achieved or the amount learned. Enrollment itself may be less related to attendance in a traditional educational setting or instructional mode. It may even be difficult to define or establish the fact of an enrollment, let alone the amount of a person's enrollment, until after work is completed, limiting the usefulness of enrollment data as a base for resource allocation.

Attacks on testing have been focused most by the apparent failure of aptitude and career interest inventories to predict accurately the performance of new constituencies or by their tendency to discriminate systematically against them. Further, criticisms of standardized tests of academic performance for advanced placement and the like have focused on their cultural biases and/or limited reliability when related to objective competency measures (Fincher, 1973). The enrollment data implications of this attack are marginal but, in view of concerns about predicting success of minorities entering postsecondary education, it does raise the difficult issue of what are the appropriate measures of academic background or prior performance if enrollment related data are to be used in this manner.

Enrollment and Financial Instability: The crucial interest in enrollments in postsecondary education today may reflect more concern for enrollment and financial stability than any postsecondary redefinition. The Carnegie Commission, the National Commission on the Financing of Postsecondary Education, the Committee on Economic Development, and many national associations all have highlighted dimensions of this issue. In virtually every segment of postsecondary education, revenues are entwined with enrollment through tuition charges, state allocations are based largely on enrollment formulas, and federal education funding is shifting from institutional and categorical grants (usually enrollment related) to direct student grants. On the revenue side, tuitions at public,

private, and proprietary institutions for both in-state and out-of-state enrollees are rising rapidly to keep up with rising costs. Concommitantly state and federal attention is being directed to other pressing areas of public concern and is reducing interest in public funding of postsecondary education while individuals' expendable income to pay for education is being reduced by inflation. Simultaneously, and for many reasons, current and projected enrollments of traditional college students are leveling off, shifting among institutional types, and even dropping in many institutions for the first time in the experience of most educational leaders. The combination produces instability and therefore great uncertainty. Thus, enrollment data and projections on the shifting student characteristics and their ability to support themselves become predictors of revenue as well as expenses. This knowledge is critical if there is to be a reduction of the instability and uncertainty. To state and federal agency personnel it is clearly a major factor in resource allocation and projections on needed future expenditures and facilities.

Unlike the preceding five conditions, which are primarily external conditions affecting the redefinition of postsecondary education, the final two are attempts by the postsecondary system to react to or deal with the external conditions. However, even these have implications for the purposes of enrollment data and the nature of data elements.

Alternative Educational Delivery Systems: This phenomenon is not new but has taken on some new directions recently. In addition to the expansion of continuing education offerings in the collegiate and noncollegiate sectors and the growth of credit by examination, efforts to develop external degrees, contract curricula, modular and competency-based curricula, and other self-paced delivery systems are numerous (Commission on Non-Traditional Study, 1973). They are encouraged by the Fund for the Improvement of Postsecondary Education as well as state agencies, foundations, and individual or institutional entrepreneurs. The area of technologically based delivery systems (audio/visual cassettes, educational TV, and computer-assisted instruction) also has grown sufficiently to merit attention (Levien, 1973). The significance for this paper, however, is the fact that students are involved in new forms of instruction not accounted for in our traditional instructional categories and, as with credit by examination, often cannot be identified as enrollments until after completion of an educational experience. More to the point, the cost factors in some of these forms of education may more truly be fixed and require larger capital or developmental costs than traditional instructional modes. These two factors suggest that resource allocation based on traditional enrollment counts and recently developed enrollment-cost relationships may be inadequate unless new ones are developed.

Planning and Management Dilemmas: The very existence of this seminar is the result of a constantly evolving debate over the management of post-secondary education. Three broad issues affect enrollment data.

First, philosophically the federal debate over institutional and categorical aid versus student-based funding suggests the conflict of a planned (whether tied to manpower, institutional types, social policy, or a combination) versus a free market system. The former suggests the need to plan for enrollments on the basis of projections related to demand for program output (graduates) or to social policy, while the latter suggests planning based on projections of demand from potential learners in the free market. Reality suggests the use of enrollment data for both. Second, the potentially conflicting financial policy interests of multiple levels of funding sources (i.e., the local community college district, state agencies, federal government) suggest the need to match enrollment data aggregation to the region governed by the funding source. This differentiation of appropriate aggregation level may also vary by program rather than by institution, as in some advanced professional work (e.g., medicine) where the funding and policy level may be regional in nature. And finally, whether accountability is to be enforced via productivity and efficiency standards or broader qualitative effectiveness measures is unsettled. Clearly the current work of NCHEMS and the postsecondary financing commission, while paying lip service to educational effectiveness, has essentially devised methods for productivity and efficiency measurement usually based on the student credit hour. Yet enrollment data should be amenable to assessments of effectiveness based on educational change or performance levels of learners and other forms of institutional impact as well.

In summary, these evolving conditions, discussed all too briefly, are ones that are evident to anyone active in postsecondary education. They represent external factors dispersing our definition of postsecondary education (and the basis of enrollment) as well as attempts to respond to that dispersion. They are often vague, confusing, or mutually contradictory. Yet they also represent many elements of the democratization of both higher and postsecondary education as it becomes more of a "right" than a "privilege," as it tries to serve and to respond to the needs of greater numbers and new constituencies. The important point for this paper is the extensive impact that these evolving conditions have on nature of enrollment data needed and on the purposes which it might serve. (See Table I for a summary.)

BASIC PROBLEMS: DEFINITION, DATA ELEMENTS, AND ISSUES

Any attempt to develop a postsecondary enrollment data system has to begin with some notion of what is meant by an enrollment. In reviewing discussions and reports of enrollment data, four dimensions are intermingled, often confused, and need to be distinguished: the enrollment measure, the characteristics of the enrollee, the characteristics or nature of the enrollment, and the characteristics of the graduate (enrollment completion). Table II summarizes some important representative enrollment data elements on these four dimensions. This is neither a comprehensive nor a recommended list--rather it summarizes

enrollment data elements that were extrapolated from the discussion of evolving conditions and that would support enrollment data purposes and analyses discussed in the final section of the paper.

The five enrollment measures identified in Table II suggest some definitional confusion as to whether they measure merely the fact of learner involvement, the amount of involvement, or the amount learned which deserves comment. Traditionally, enrollment in the collegiate sector has been measured as "head counts of enrollees" and "full-time equivalent students" based on the student credit hour (see The Carnegie Unit for explanation of the history of the controversial student credit hour). Headcounts only reflect the fact of enrollment. Both of these measures, utilized by HEGIS, are generally understood in the collegiate sector, although the number of student credit hours constituting a full-time equivalent often varies by level and institutional type and may vary within a given institutional type. (Standards for FTE calculation also vary among states.) The most severe criticisms of the SCH measure, however, are that it adequately reflects the amount of involvement only in traditional, formal learning situations and that it is often used indiscriminately and imprecisely to reflect the amount learned (some percent of a degree). The "full-time equivalent measure based on contact hours" is more widely used at the state level for reviewing faculty load as a better measure of actual faculty time spent in teaching and generally is not used in counting students nor equated to the amount of learning.

TABLE II

REPRESENTATIVE ENROLLMENT DATA ELEMENTS

Dimensions of Enrollment	Definition of Enrollment		
	Fact of Involvement	Amount of Involvement	Amount of Learning
A. Enrollment Measure:(1)			
1. Headcount as enrollee[a)]	Yes	No	No
2. Headcount as course or program enrollment[c)]	Yes	Varied	Varied
3. Full-time equivalent by student credit hours[a)]	Yes	Yes	Yes(?)
4. Full-time equivalent by contact hours	Yes	Yes	No
5. Continuing education unit	Yes	Implied	Implied
B. Characteristics of Enrollee:(1)			
1. Sex[a) c)]			
2. Age[b) c)]			
3. Race or ethnic group[b) c)]			
4. Income level (self or family)[b)]			
5. Family residence (zip code)			
6. Prior academic record			
7. Prior PSE experience			
C. Characteristics or Nature of the Enrollment:(1)			
1. by level: first time, lower, upper, first professional, graduate[a) c)]			
2. by field: HEGIS Taxonomy of Instructional Programs[a)]			
3. by occupational program[c)]			
4. by instructional type: lecture, discussion, seminar, modular, technology based, credit by examination			
5. by degree or nondegree[a)]			
6. by institutional type in collegiate sector: public and private; 18 category typology (USOE)[a)]			
7. by institutional type in noncollegiate sector: public, proprietary, nonprofit, and sectarian; 9 category typology (USOE)[c)]			
D. Characteristics of Graduates (same as in B).			

(1) All elements do not apply to all types of institutions or educational programs--see text discussion.

a) HEGIS categories

b) U.S. Census Survey

c) Survey of Programs and Enrollments: Postsecondary Schools: OE Form 2358

The other two measures of enrollment, "headcount as course or program enrollment" and the "continuing education unit," are recent adaptations. The former is widely used in occupational programs which are not degree related and is the basis for the Office of Education's "Survey of Programs and Enrollments: Postsecondary Schools (1973)." This measure of headcount is potentially subject to duplication if individuals are enrolled in more than one course or program. Within some institutions and some occupational fields, however, it is applied with some consistency as a fact of enrollment and, because of accreditation program standards, is occasionally used to suggest either an amount of involvement or an amount of learning. The "continuing education unit" is a response of the Commission on Colleges of the Southern Association of Schools and Colleges to account for noncredit continuing education activity. The guidelines (The Continuing Education Unit, 1973) suggest that this measure implies both an amount of involvement and an amount of learning as well as the fact of involvement. Thus, we have five measures of enrollment. Only one, headcount as enrollee, potentially could be related to all forms of postsecondary education, but even this measure conveys only a fact of learner involvement in a formal learning situation. The other four are primarily related to different types of education (traditional collegiate, occupational, and continuing education), and only partially or inadequately convey amount of involvement or amount of learning, and do so without any direct comparability.

These observations raise the basic issue for enrollment accounting:

1. Do we need a uniform enrollment definition measuring: fact of enrollment? amount of involvement? or amount learned?

or

2. Are we willing to accept differing definitions of enrollment for occupational (degree and nondegree), traditional degree, and continuing (nondegree credit) education?

    a) Within institutional types?
    b) Across institutional types?

These inadequacies of enrollment measures are compounded by questions of timing of measurement. Enrollment figures differ depending on whether they are taken after registration, after a drop-add period, at the end of a term, and even on the term in which they are taken. Differing institutional policies or schedules probably make these concerns meaningless on a national scale, but they can be significant at the state level (i.e., What is the real enrollment for state appropriations? Is utilization down in the summer? Why should it be?). The timing issue is compounded further by the new forms of modular and/or self-paced instruction, external degrees, and credit by examination. At what point is a person considered enrolled? Only after the fact? When do they become responsible for tuition or other fees? Thus, the question of the timing of measurement, as well as definition of enrollment, is a critical issue if more accurate pictures of enrollment are to be conveyed.

The characteristics of the enrollees and graduates, and the nature of their enrollment listed in Table II, are straightforward and suggestive

rather than recommended. While state level surveys were not reviewed, it is interesting to note the limited nature of the Office of Education's HEGIS survey characteristics. Sex is the only enrollee characteristic regularly requested despite concerns for other characteristics already mentioned. HEGIS surveys have focused more extensively on characteristics of the enrollment. The current effort to survey programs and enrollments in postsecondary schools is an attempt to expand data collection in the occupational and vocational sector. This survey includes age and minority status, as well as sex, by institution. A crucial area for consideration, as the earlier discussions have suggested and which is not in either OE survey, is the typology of instruction. Not only are enrollments harder to gauge in some of the emerging innovative academic areas, but also the cost relationship will be of substantial interest in these newer delivery modes.

While it is feasible to collect and aggregate such data at the institutional level, the costs and value of such data to the institution, the state, and the federal government are not assessed in this paper. The question of whether aggregation at state, regional, or national levels is best done on a comprehensive or on a sampling basis should also be assessed. The extensive delays in getting USOE-collected enrollment data into published form for distribution suggests the need for sampling techniques and faster reporting if enrollment data are to be more useful at the national level. The potential use of these data in monitoring the postsecondary system and their relationships to other data will be discussed in the remaining sections of the paper.

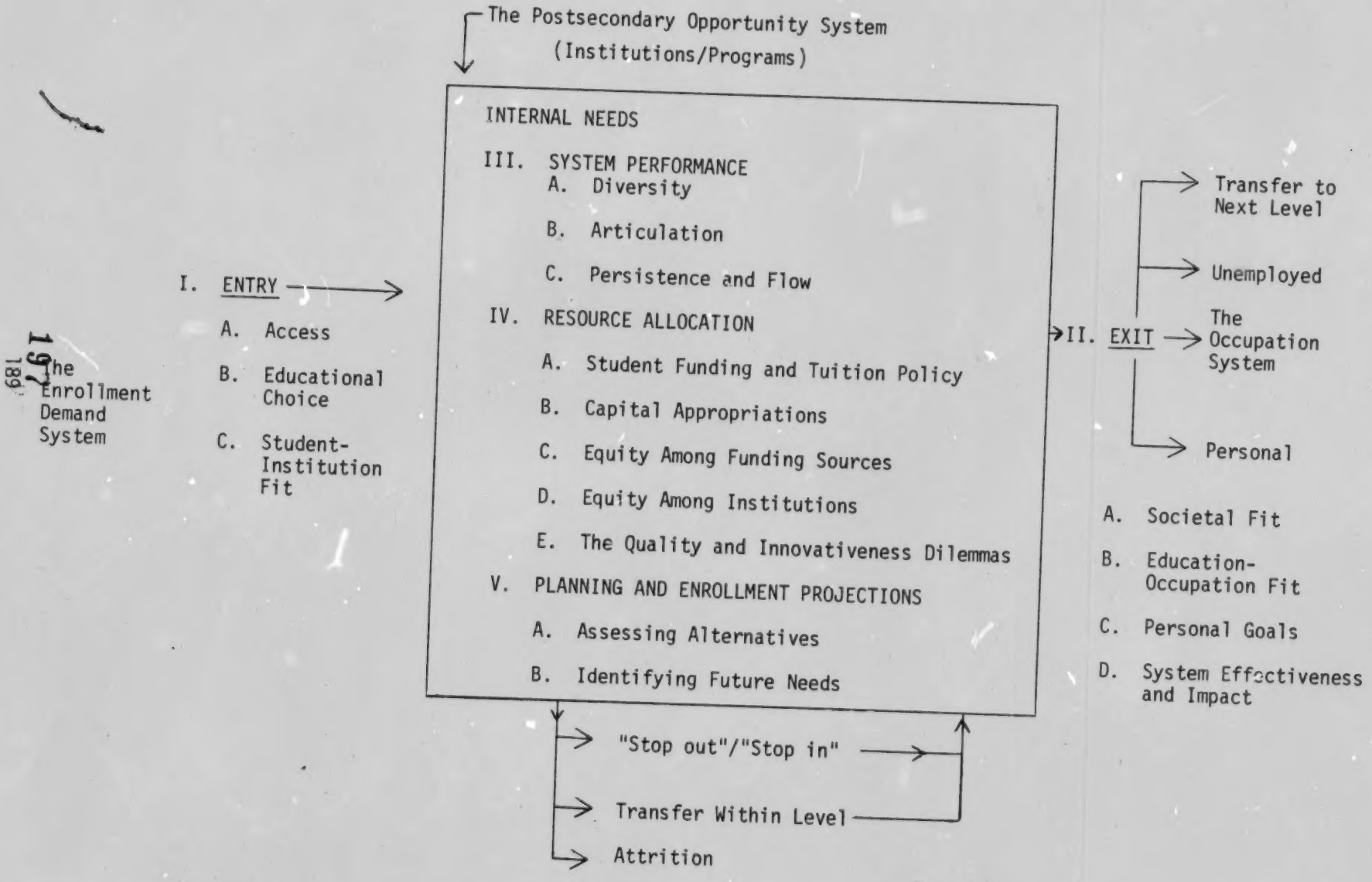
THE CONCEPTUAL FRAMEWORK: A POSTSECONDARY ENROLLMENT SYSTEM

It should already be obvious that enrollment data occupy an unusual niche in the postsecondary system. They have multiple uses; they are simultaneously an independent, intervening, and dependent or criterion variable. In assessing educational demand in a free market system, enrollment is a dependent variable; in assessing resource needs in such a system, it is an intervening variable; in assessing occupational supply and demand relationships, it can be an independent variable; and in assessing the results of social policy as with minority education, it is a criterion variable. These multiple roles for and uses of enrollment data are often confused or not clearly stated in enrollment based studies. The interpretation of a study depends on whether enrollment is assumed to be an independent or dependent variable. The conceptual framework shown in Table III is an attempt to capture the pivotal role of enrollment data, to clarify the distinctions of their multiple uses, and to relate them to the purposes they serve in the larger postsecondary system.

The framework is an open systems model which would follow enrollees by their various characteristics from initial enrollment (input), through their postsecondary experiences (process or characteristics of enrollment), to their exit or completion of a program or level (output or graduate characteristics). The framework also reflects the relationship of this paper to others in this seminar.

TABLE III

THE POSTSECONDARY ENROLLMENT SYSTEM



The postsecondary enrollment data system attempts to portray data which, depending on the selection of enrollment measures, of characteristics of the enrollees, and of characteristics of their enrollment (Table II), reflect the extent of involvement of all individuals in available post-secondary opportunities (institutions and programs). Potential enrollees enter from the demand system, are involved for some time, and may eventually exit for employment or other purposes to the occupational system. This framework provides data for assessing the "fit" of the postsecondary system to the demand, opportunities, and occupational systems using entry-level, total, and exit-level enrollment data respectively. Additionally those same data provide potential internal indices or measures which serve the performance, resource allocation, and planning and projection needs of the system. The next five sections briefly discuss these two interfaces and the three internal needs. In each section the use of enrollment data in relationship to some basic policy issue is discussed and examples of current or needed studies are identified. (Table IV summarizes these discussions.) In many instances enrollment data are not sufficient for full analysis and need to be supplemented by other data. However, in all of the remaining discussions enrollment data play a major role.

TABLE IV

ENROLLMENT STUDIES IN POSTSECONDARY ENROLLMENT SYSTEM

Purpose of Enrollment Study	Enrollment Study or Report Needed	Sources or Exemplary Studies
I. Entry Level		
A. Access	Report of initial enrollment by age, sex, race, income, and prior performance (Levels of aggregation: National and state or regional by institutional type)	USOE: all institutions and by sex ACE Survey: collegiate institutions only by all characteristics
B. Educational Choice	National survey of applicants by enrollee characteristics and institutional type	Institution's applicant records
	Institution rejection and utilization rates by institutional type	Institutional utilization records
	Follow-up of studies of high school students	U of M's Institute for Social Research study on Youth in Transition
C. Goodness of Individual-Institutional Fit	Early attrition rates by institutional type	Institutional records
	Studies predictive validity of selection criteria	Institutional records
	Use of standardized institutional goals instruments	ACT, ETS instrumentation (collegiate sector primarily)

TABLE IV (Continued)

Purpose of Enrollment Study	Enrollment Study or Report Needed	Sources or Exemplary Studies
II. Enrollment-Society Fit		
A. Societal	Reporting for full range of types/ enrollment and enrollees	More emphasis on characteristics of enrollee and enrollment as well as types of institutions
B. Educational-Occupational	Reporting of enrollments and graduates by occupational, disciplinary, and professional areas and degree level Relation to manpower needs (aggregation level?)	USOE Reports Manpower studies
C. Personal Goals	Survey of individual's success in placement, reentry, or personal goals by institutional type	Some institutional studies Some studies by professional associations
D. System Effectiveness	Summary of graduate competency (?), occupational need impact, personal impacts by institutional type	Assessments of competency work currently under way Study of Commission on Human Resources and Advanced Education and other education-manpower studies Withey's summary, A Degree and What Else?

TABLE IV (continued)

Purposes of Enrollment Study	Enrollment Study or Report Needed	Sources or Exemplary Studies
III. Internal System Performance		
A. Diversity	Longitudinal reports of first-time, total enrollments, and graduates by institution and by program Enrollments in new instructional modes	Longitudinal comparison of USOE reports Studies of academic innovation and change
B. Articulation		
1. Geographic Mobility	Geographic mobility by institutional type	ACT study
2. Institutional Mobility	Migration studies among and between institutional types a) within level b) between levels	Surveys of enrollees by prior postsecondary experiences
C. Persistence and Flow		
1. Rate of flow	Reports of "rate of flow" and "time to level" by institutional type and program	HEGIS Survey Special studies by institutions and by disciplines
2. Continuity	Longitudinal or cross-sectional of patterns of continuity	Census data

TABLE IV (Continued)

Purpose of Enrollment Study	Enrollment Study or Report Needed	Sources or Exemplary Studies
IV. Resource Allocation		
A. Student Funding and Tuition Policy	Persistence and migration studies (See Table III)	
B. Capital Appropriations		
1. Facilities	Utilization studies	Many institutional and state studies
2. New program development	Occupational demand	Many institutional and state studies
C. Equity among funding sources (transfer pricing)	Migration between funding source regions	Surveys of enrollees by funding region/home address (zip code)
D. Equity among institutions	Cost comparisons (based on enrollment unit) by institution, by level, and by field	NCHEMS Information Exchange Procedures
V. Planning and Enrollment Projections		
A. Assessing alternative strategies	Instutional level	NCHEMS Student Flow Model and RRPM
	National level	Analysis by Commission on Financing PSE
B. Identifying future needs	Enrollment projection models	See Table III

DEMAND-ENROLLMENT AND ENROLLMENT-OPPORTUNITY FIT: THE ENTRY BOUNDARY

Enrollment data on initial or first-time entry of enrollees into the postsecondary system are at best a very indirect measure of demand-enrollment fit and enrollment-opportunity fit. On the demand-enrollment side, initial enrollment data must be compared with demand measures defined either in terms of a particular pool of people in the population or in terms of their aspiration level for programs if one is to make judgments about whether there is an initial "good fit." However, data on initial enrollments can provide indicators of the extent to which students have initial equality of access (not choice) and whether that initial enrollment (or attachment) represents a good fit of student and institution.

Concerns for nondiscrimination and affirmative action all suggest that first-time enrollment data need to be reported by age, sex, racial and ethnic background, family income, and some measure of prior educational performance by institutional type for the total postsecondary system at state and federal levels if equality of access is to be examined. Clearly judgments about what determines equality of access can only be made on the basis of more careful analysis of the nature of the available financial support, the demand for various institutions by different groups, and performance standards of different types of institutions. Also state or regional differences in family income and racial or ethnic

background suggest the need to break the analysis down for those levels of aggregation. Currently the National Center for Educational Statistics can provide such data by sex in the collegiate sector and is developing that capacity for sex and race characteristics in the noncollegiate sector. Data on age, race, financial support sources, and prior educational performance are most visible in Astin's ACE Survey of Freshmen, but only for a sample of the collegiate sector (ACE, National Norms 1972). The value of these data are noted in this year's report that, for the first time in several years, first-time minority enrollment is declining (Chronicle of Higher Education, Feb. 11, 1974). Unfortunately, use of this valuable though limited data source is difficult to arrange. Other similar studies and surveys are much more limited and nonrecurring. Thus, either the expansion of the data elements in the NCES surveys or the broadening of the sampling base of a survey like that sponsored by ACE to include other postsecondary institutions and programs is clearly needed.

The assessment of goodness of fit between the student's initial enrollment and the institution is a critical question from the student's perspective as well as for those concerned with the effective performance of the postsecondary system. Studies of early attrition records would be indirect measures of this dimension. Studies of the validity of predictive criteria, if any, used in selection by various types of institutions would also be useful. Indeed, concerns for affirmative action and the recent court interest in testing and selection criteria

mentioned earlier make it mandatory that institutions review their own selection criteria. Other related attempts to profile the match between institutional (faculty and administrators) and student goals in instruments such as ETS's Institutional Goals Inventory, ACT's Career Interests Profile, or Gross and Grambsch's Goals Inventory, while scarcely adequate for selection, may provide students with better data on the nature of the institutions (at least in the collegiate sector) they are considering. All of these attempts to access "goodness of fit," however, seem far more likely to be matters for state or regional concern since they depend on varied institutional data records and/or special instruments or studies. Possible exceptions might be certain advanced graduate fields or certain professions (e.g., medicine) where national priorities are clearly focused.

The assessment of the fit between initial enrollment and the postsecondary opportunity system (institutions/programs) is largely a matter of whether initial enrollees have freedom of choice in entering institutions for which they qualify. This area is only indirectly and inadequately assessed by enrollment data and subject to the same data qualifications and judgmental issues mentioned in equality of access. However, a survey sampling of applicants to postsecondary institutions in order to identify rejection rates by institutional type, large-scale follow-up studies of high school students (e.g., Institute for Social Research's Transition to Youth study at the University of Michigan), or studies of utilization

(enrollment/available opportunities) rates by all institutional or program types could provide insight into freedom of choice in different areas.

Clearly at the entry level, enrollment data are most amenable to dealing with questions of equality of access to postsecondary education and would seem to merit priority concern. The issues of educational choice and individual-institutional fit are only indirectly related to enrollment data and are probably issues more appropriately dealt with at state, regional, or even institutional levels.

ENROLLMENT-SOCIETY FIT: THE EXIT BOUNDARY

At the other extreme of the enrollment system, the exit boundary, enrollment data, interpreted as projected or actual graduates, are helpful in assessing how postsecondary education is related to needs of individuals and occupations. This paper's emphasis on a more comprehensive accounting for more types of enrollments and institutions and for greater breadth of characteristics of enrollees reflects a concern that the postsecondary system serve a broader constituency. In this sense the entire enrollment system framework is an attempt to assess the enrollment-society fit and needs little comment. However, studying enrollment outputs (graduates or program completers) suggests specific ways of assessing enrollment-occupation and enrollment-personal goals fit. The exiting student who is transferring to a higher level of education or program

may be doing so for either occupational or personal goals. This suggests the use of enrollment data to study transfer patterns; however, this is discussed under the section on internal system performance.

First, the fit of the enrollment and occupational structures is in part exemplified by the concern for "postsecondaryism" which covers a vast array of occupational as well as collegiate learning settings. The attempts by NCES to report graduates by occupational programs as well as traditional professional and disciplinary fields further exemplifies that effort. However, there is still an on-going need to identify the most appropriate aggregation level of occupational manpower needs in relation to educational program enrollments and graduates. For instance, in many occupational areas the demands for trained personnel is regional or even local while in some professional or advanced degree areas it may be national. The appropriate level of aggregation of manpower demand and enrollments depends not only on better assessment of the regional nature of the manpower need but also on the mobility of the potential graduate geographically and the proportion of people who normally do not intend to work in the occupational area most closely related to their occupational program perparation.

Second, an area of the enrollment system on which we have perhaps the least data is the students who are completing a program or degree and the extent to which they have met personal goals. Has the student achieved

his or her educational goals in terms of entering the occupation for which he or she was prepared? If different, was it by choice? If the personal goal was not occupational, has it been achieved? Is the student reentering postsecondary education at another level? Aside from these personally perceived occupational and advanced educational goals and the possession of a degree or certificate, what is this student's level of competence? Recent attacks on the meaning and relevance of a degree and the recent developments of competencybased curricula and exams might focus these issues in the future. While individual private institutions and some occupationally oriented institutions take this task of followup seriously, there have been few attempts to assess the extent to which exiting students have met their own goals, whether occupational or non-occupational.

No discussion of the exit boundary could be complete without some question of what exit data, as output, say about <u>total system effectiveness or impacts</u>. While we currently report productivity data (degrees or certificates granted by institution and program), other aggregated data need consideration. The National Commission on the Financing of Postsecondary Education suggested efficiency datacosts per student credit hour by institutional type, field or program, and level of instruction. Yet true effectiveness data are needed also. What proportion of students of different characteristics (age, sex, race, income level, etc.) are succeeding? What is the impact of postsecondary education on

occupational demand in different areas? What is the aggregate level of competence of graduates? What portion of graduates have satisfied personal and/or occupational goals? These are complex questions dealt with occasionally or indirectly in such examples as the Commission on Human Resources and Advanced Education (Folger et al., 1970) or the Carnegie Commission's summarization, A Degree and What Else? (Withey et al., 1971).

The characteristics of the enrolled student other than by sex and degree area at the time of completion of a degree or program are lacking. Either better follow-up and reporting on graduates by institutions or an ACE-type survey of graduates, as well as entering freshmen, could provide better assessment of the fit between enrollments and occupations or personal goals.

INDICATORS OF INTERNAL SYSTEM PERFORMANCE

To a greater degree than at entry and exit, enrollment data can be utilized to monitor some important dimensions of internal performance characteristics or the processes of the postsecondary system. Briefly, these involve measures of the diversity of the postsecondary system--a characteristic much prized by the Carnegie Commission, the Postsecondary Financing Commission, and generally acknowledged by observers of American education; measures of articulation between the institutional parts of postsecondary education; and measures of student persistence and flow.

Diversity can be assessed in terms of institutions, enrollments, or student characteristics. Diversity, interpreted merely as the "existence of diverse types of institutions and programs," is not an adequate indicator of their existence as healthy, stable, or growing elements. Further, indications of their failure (nonexistence or reduced diversity) occur too late to be remedied. Thus, "diversity by enrollment," longitudinal reports of first-time, total, and graduating enrollments by institutional type, by program, and by level present a better picture of the diversity of these sectors as well as their viability. Such reports may be useful in interpreting the impacts of in-state to out-of-state tuition policy shifts, availability of state funding to private as well as public institutions, or shifts in federal institution or categorical aid programs. The data for such reports are contained in NCES's current HEGIS and Post-secondary School surveys.

Another element of "enrollment diversity" is needed to reflect our current concern for innovation, reform, and/or new educational delivery systems. Longitudinal enrollment reports that provide enrollment in various "instructional modes" would be helpful to identify the growth and/or availability of innovative modes. However, in the absence of such regularly compiled data some sampling mechanism, either longitudinal or in the form of special studies, of these areas can sensitize us to their trends. A final measure of diversity is "the shifting characteristics of enrollees" by institutional type and program, which is discussed in the

sections on "access" at the entry boundary, on success or "completion rate" at the exit boundary, and on "continuity" in the persistence section. This element of diversity is a measure of the extent to which postsecondary education is serving the entire population at all levels and in all types of institutions.

Clearly enrollment data are helpful in the assessment of diversity. However, due to differences in geographical region and states, the aggregation of such data at these levels may be more useful. Indeed, a key policy question for educational planners in statewide, in urban, or in inter-state regions concerns the question of how much diversity of institutional and program type, of instructional mode, and of students should be maintained within their own respective region.

The articulation dimension of system performance within postsecondary education (not between secondary and postsecondary) is concerned with measures of "geographic mobility," "institutional mobility," and "programmatic articulation." The former is measured by migration studies and the latter two by transfer patterns. Indirectly they get at the impacts of credentialism and accreditation and the question of distinctive markets within the system. Within the traditional higher educational system, especially among private institutions and the more prestigious public universities, "geographic mobility" has been highly valued as a means of insuring a diversified student body, as a means of attracting

highly qualified students, and occasionally because certain advanced programs or fields are truly national in character. If institutions record home state or zip code as an enrollee characteristic, mobility patterns in terms of proportions of in-state or out-of-state enrollments or by distance traveled could be ascertained for different types of institutions. A very creative migration study using ACT test data (Fenske, Scott, and Carmody) compared distance traveled to attend college by students of different family income levels at different points in time. In a sense this was a measure of the "opportunity" for geographic mobility within the collegiate sector.

The "institutional mobility" measure has two distinguishable levels: transfer between levels (degree or program) and transfers within level. Such transfer studies among different types of postsecondary institutions would provide insight into a number of issues in postsecondary education. Transfers among institutions within levels would provide some measure of "goodness of fit" of student and institution--do they transfer early?, does the dominant pattern indicate that they "trade up" or "trade down" in terms of institutional quality (credentialism)?

Transfers between levels (occupational program to lower to upper, etc.), among or within different types of institutions would provide insight not only into the "trading up" or "trading down" (credentialism) issue, but also could suggest whether patterns of accreditation seem to restrict

transfer in some directions. Transfer and migration analyses, both within and between levels of types of institutions, could provide insights into whether there are in fact distinctive markets for postsecondary education; i.e., is most transferring done either within the collegiate or within the noncollegiate sector? Is most transferring within a limited geographical region and in effect defining a regional market?

Finally, the question of "programmatic articulation" is an important focused use of transfer studies. For example, in manpower planning in professional areas (law, medicine, engineering) where students do not necessarily stay in one field as they progress with their education, what are the patterns of transfer between programs as they progress? Such information is necessary to project future professional degree outputs. Transfer studies of "institutional mobility" and "programmatic articulation" could be done through a sample survey of new enrollees in various institutions and programs if they indicated prior or most recent postsecondary educational enrollments (or alternately it could be accomplished by the follow-up of graduates suggested earlier). Periodic replications of both migration and transfer studies would greatly aid our understanding of the flow of postsecondary enrollments as well.

While questions of the direction of flow of students are addressed by the transfer and migration studies already discussed, questions of persistence of students are addressed by looking at dimensions of "rate of flow"

through and of "continuity" in the system. These questions are directly related to issues of educational opportunity (not just access), availability of student funding, and of breaking the "lock step." The "rate of flow" of students through postsecondary education is easily addressed by looking at their average "degree of inclusion" (percent enrolled full time) and average "time to achieve each level." Data on the former measure are easily available by institutional type and program or field in the NCES surveys. However, in order to obtain data on "time to level" it would be necessary either to collect new data elements or to include such information in a survey of program and degree graduates as suggested earlier. This information would shed greater light on educational opportunity if it were reported by enrollee characteristics of age, sex, and race. Interestingly, policy concerns for breaking the lock step support reduced rates of flow while concerns for shorter programs (3-year degree) and manpower training generally emphasize increased rates of flow.

The question of "continuity" or enrollment is useful to distinguish students who attend "continuously" (regardless of rate) to completion of their program, those who "stop out" within or between levels for periods of time by necessity or by choice (for educational reasons), those who occasionally "stop in" (not continuously enrolled), and those whose dropping out represents real or semipermanent attrition. This type of study of continuity is perhaps least amenable to any simple data collection since it may require longitudinal surveys. However, it may offer

some of our best insights into differing patterns of attendance, which institutional types are in fact appealing to students who have broken the "lock step," and which types are more responsible for real attrition (failure) or success by students of different characteristics.

These suggested uses of enrollment data for monitoring internal system performance are probably the most varied of any discussed. They range from pure description of enrollment patterns to difficult longitudinal or cross-sectional samples of the population. Yet they potentially offer the greatest insight into how our postsecondary system currently works.

RESOURCE ALLOCATION

The extensive dependence on the student as potential enrollee and on enrollment data as the basis for financial allocations or appropriations by federal and state governments was highlighted in the "evolving conditions" section of the paper. Further, enrollment data on persistence of students and migration or transfer data to assess impacts of student aid programs and in-state/out-of-state tuition policies has already been mentioned. However, there are specific resource allocation issues having to do with capital appropriations, equity among funding sources, and equity of allocations among institutions which deserve discussion.

On the issue of state level capital appropriations, enrollment projection data are or can be an integral part of an assessment of the utilization of existing postsecondary facilities to determine the need for such facilities. Further in-state and out-of-state enrollment patterns or graduate placement data are often useful in assessing the need for new and/or potentially duplicative programs. Examples of these uses of enrollment data are well documented in most states.

The issue of equity among funding sources, or who should support education of students from different funding regions, is analogous to the "transfer pricing" issue in business and industry. In-district and out-of-district tuition policies by region of fund source (e.g., a local district for community colleges and/or the state for most public institutions) are an uncoordinated attempt to achieve equity. However, to avoid duplication of programs or to provide necessary programs at a scale to be comprehensive and economical, interstate agreements are often used. An example is the interstate regions for some professional and advanced degree fields (e.g., medicine) in which the net flow of students (enrollments) between states or funding districts is weighted by tuition or tuition differentials. This offers a mechanism for assuring each district an equitable funding allocation from other funding districts. In a sense this resource allocation mechanism, dependent on between-district enrollment migration data, is a form of interdistrict cooperation. It helps avoid duplication of undersized programs in contiguous regions

ard/or depressing enrollments due to high out-of-district costs and at the same time assures some element of equity to all funding sources involved.

The issue of equity among institutions within a funding region (primarily a state) is a far more controversial one. The issue concerns the question of whether a funding agency should allocate different amounts of money to different institutions offering education at the same level in the same field or program. Without taking sides on the issue, whether one interprets equity as equal student/faculty ratios across similar institutions or as equal dollars allocated per enrolled student (headcount or FTE) by field or by level, the use of enrollment data as a basis for such comparison is clear. It is also obvious that these measures place great emphasis on efficiency and productivity reports as the basis for assessing equity and do not reflect qualitative differences if they exist.

In all of the questions about resource allocation, the problems of quality maintenance and innovative forms of education remain as dilemmas. Without demonstrable differences in student performance or other quality measures, enrollment data become the unwitting servant of the cult of efficiency. The Commission on the Financing of Postsecondary Education sidestepped the dilemma by recommending that institutions be encouraged to report "costs of instruction per student by level and by field" (p. 354). They recognized that there were cost differences on these dimensions but did not clearly state whether differences should exist within level, within fields,

in different institutions. But clearly the recommendation forces us to face directly the issue of identifying quality if differences are to be justified.

It was also pointed out earlier that many innovative forms of education and new educational delivery systems (credit by exam, modular or self-paced instruction, competency-based instruction, external degrees, contract learning, technological delivery systems) are not at present easily translated into student credit hours or even clearly identifiable as enrollments until after the fact. Since the cost per student credit hour methodology for allocation is usually determined by a large portion of assigned direct instructional time with smaller indirect costs, it does not fit these newer forms of education where there may be only limited direct instructional costs and far larger indirect costs for development (e.g., modules) or capital purposes (computers and terminals). The shift may be from labor intensive to capital intensive production and from high variable-cost to high fixed-cost education. In this educational area there is a need for new cost allocation methods if costs are to be related to enrollment units which are themselves as yet unclear. In the interim this paper merely identifies the unresolved need for clearly identifying enrollment measures and new costing techniques in these new types of instruction. The dilemmas of quality and of methodology for costing innovative education remain matters for care, judgment, and yet-to-be-

devised measures. The use of enrollment data for all these dimensions of resource allocation is, however, an indisputable fact of higher education resource allocation.

PLANNING AND ENROLLMENT PROJECTIONS

The final postsecondary system purpose served by enrollment data concerns planning and the use of enrollment projections. The use of enrollment data for resource allocation purposes in planning capital facilities and new program development has already been discussed. Also, examples of enrollment-driven simulation models at the institutional level which serve planning functions in assessing the resource implications of alternative institutional enrollment patterns, educational program strategies, and other institutional policy assumptions have received considerable publicity (e.g., NCHEMS Student Flow Model and RRPM). At the national policy level the Commission on the Financing of Postsecondary Education provides an example of the use of simulation to test alternative financing plans utilizing enrollment-based criteria (access, enrollee or student choice, and opportunity). Enrollment data were used by the Commission and were basically drawn from USOE's existing HEGIS and Postsecondary Schools surveys and supplemented by census and Carnegie Commission data.

However, three enrollment projection approaches (trend extrapolation, policy alternative, and futurist approaches) are currently or potentially useful in relation to five broader strategies for planning either in

postsecondary education or any segment of it. (Naturally, pure planning strategies exist only for illustrative purposes.) The first two planning strategies--the "demand model" and the "manpower model"--essentially rely on enrollment projections based on trend extrapolation (basic extrapolation assumptions, of course, can be altered). In the demand model the planning concern has been initially to forecast enrollments by extrapolating existing enrollment trends (rather than actually forecasting "demand" or "aspiration") and then to plan educational resources to meet them. The currently espoused "free market" system for supporting postsecondary education would be an example in which this approach might be used. The manpower planning model has a different order of concerns. First manpower needs are forecast and then one asks how they fit projected enrollments or graduates in order to identify the needed adjustments to increase or decrease enrollments. The Commission on Human Resources and Advanced Education adopted this strategy in a broad national study while numerous state level educational manpower studies have done so on more focused occupational and vocational programs and in more limited geographic regions. A third planning strategy, "policy planning," begins with crucial policy issues and selects policy alternatives as the basis for modifying the assumptions of trend-extrapolated projections (i.e., creating policy alternative projections). The finance commission and the earlier Carnegie Commission study of New Students and New Places both utilized this strategy. The fourth planning strategy, the "futurist approach," attempts to create, as validly as possible,

alternative future societies, to clarify the role of education in them, and then to identify the steps necessary to move to that particular future scenario. This form of planning could use projection techniques (perhaps policy alternative projections) but current examples either have not done so or have done so only in a very vague, global manner. A fifth planning strategy--the "anarchical" or "flexibility" approach--stresses developing flexible organizations and institutions which can easily adapt to changes. Except for those focused in the very near future, projections play little role in such a strategy.

*An excellent recent review classifies eight national enrollment projections by the three projection approaches just mentioned (see Table V). The authors' critique points out the wide divergence of enrollments projected in these studies, their limited focus on the collegiate sector of postsecondary education, their lack of comparability, and their overly aggregated nature which masks significant trends. In addition to other methodological problems, they note some serious limitations of virtually all the projections in that they focus on 18-21-year-old cohort when age ranges of students are broadening, they only project male-female breakdowns when other student characteristics are also of primary concern, and they assume no change in institutional composition when shifts of enrollment among various types of institutions are already obviously occurring.

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*This discussion is a summary of the work of W. Mangelson, D. Norris, N. Poulton, and J. Seeley (1974) and is used with their permission.

TABLE V

CLASSIFICATION OF PROJECTION STUDIES
BASED ON PROJECTION APPROACHES

Studies*	Trend Extrapolation	Policy Alternatives	Futurist Approaches
U.S. Bureau of the Census	X		
U.S. Office of Education	X		
Carnegie Commission, New Students and New Places	X	X	
Commission on Human Resources	X		
Cartter-Farrell	X		
Office of Program Planning and Evaluation (USOE)	X	X	
RAND	X	X	(X)
Marien, Beyond the Carnegie Commission		(X)	X

*Exact sources listed in Bibliography

Reproduced from W. Mangelson, D. Norris, N. Poulton, and J. Seeley, Projecting College and University Enrollments, Center for Study of Higher Education, University of Michigan, February, 1974.

They conclude by identifying a broader array of factors which need to be monitored and suggest a broader framework for future projections.

The significant point in this discussion is that despite the inadequacies of even our best attempts, enrollment projections are still useful for postsecondary planning. Improved data on a greater number of student characteristics and on a larger number of institutional types can enable planners to make more useful and carefully conceived short-term projections even if they are less accurate in long-range projections. The major point highlighted by our experience with recent supply-and-demand imbalances is the need to project enrollments accurately, regionally or nationally depending on the level and type of program, for a period of time that exceeds the normal time typically required to complete the program or degree. This provides data to facilitate institutional program change and to forewarn students of the danger of being trapped in unwanted areas of specialization. Longer-term projections which may not have the same level of accuracy and specificity can still alert us to the possibility of trends or future shifts of major consequence.

CONCLUDING COMMENTS AND OBSERVATIONS

This paper has not focused narrowly on identifying existing patterns of postsecondary enrollment or all existing data sources. Rather it has: (a) reviewed some evolving conditions that affect enrollment to help

identify enrollment data purposes and data elements needed; (b) pointed out some definitional and measurement problems; (c) developed a framework for postsecondary educational enrollment data which links the demand, opportunity, and occupational spheres; and (d) identified studies which utilize enrollment data that would be helpful to policy planners and others interested in understanding the postsecondary system. Several overview comments are perhaps obvious:

(1) Enrollment data have extensive potential as a monitor of significant changes, as a measure of policy impacts, and as a policy planning tool in postsecondary education at varied levels.

(2) There are some crucial definitional issues and a need to prioritize our concerns for measuring enrollment as a fact of learner involvement, amount of involvement, or amount of learning. This resolution requires examination of both the type of learning or institution in which the enrollee is involved and the use that is to be made of the data.

(3) Some limited additions to data currently collected by USOE (see Table II) could vastly improve our ability to monitor the system and should have a high priority.

(4) More rapid availability of USOE data would significantly improve our ability to monitor the system. Many of the studies and reports suggested could be done on a sampling basis which would speed up the process.

(5) Many alternative sources of data--Carnegie Commission, Census Bureau, ACE, testing services, USOE and R&D Center surveys, etc.--are effective means of getting at many enrollment-related issues. A more adequate study of these and other sources and the feasibility of continuing or repeating them (annually or at less frequent intervals) to supplement the HEGIS and Postsecondary Schools data needs to be assessed.

(6) A particularly high priority would be for a far more extensive collection of data on students entering and exiting the system. Expansion of the ACE survey of freshmen beyond the collegiate sector and some similar survey of students completing programs would give us better early warnings of change both at the demand-enrollment and enrollment-occupation (or transfer) interfaces.

This paper has attempted to identify reports and studies which are related to questions about the postsecondary enrollment system's functioning and are also responsive to many current policy issues. While this framework is overly elaborate and generalized, it should provide a useful outline for systematic data collection, analyses, and reports on postsecondary educational enrollments at state, regional (within or between states), or national level.

RESPONSE

by

Lyman A. Glenny

Dr. Glenny is a Professor of Higher Education and Director of the Center for Research and Development in Higher Education at the University of California, Berkeley. He currently is directing a three-year study of state budgeting for higher education, financed jointly by the National Institute of Education and the Ford Foundation.

Marvin Peterson in his piece, "Postsecondary Education Enrollments," has done what many of us have thought to do. However, it is doubtful that, if we had, the product would have been as thoroughly and insightfully done as his. This is a first-rate conceptual paper outlining the major problems in counting students and applying management and costing techniques to those counts. The exhaustiveness of cited problems allows even the most simple-minded of us to recognize the complexity of, and perhaps even the improbability of, obtaining "accurate" enrollment counts in a single college or university, much less in whole systems of them.

Peterson wisely refrains from attempting enrollment projections for any segment of postsecondary education, although he hints, as others have done, that while the number of FTE students in traditional higher education may be leveling off, perhaps for postsecondary education as a whole it is still increasing. The new figures from the National Center

for Educational Statistics on proprietary education may partially validate the observation, but it seems improbable.

That is so because if we work within the limited definition of post-secondary education which was offered by the National Commission on the Financing of Postsecondary Education, we are doomed to stay confused and lost. The Commission entered the uncharted seas of the postsecondary world, assuming that to explore and to explain the easily assessable part (read "accredited by USOE") would at least give us a universe greatly expanded over the old higher education one. It did that, but the Commission failed to comprehend that where the action really is in postsecondary education falls in those broad oceans omitted from its perview. Marvin Peterson, unfortunately for us, accepts the Commission's limited definition with few qualms and thus limits his analysis to the part of education which is accredited and easily identifiable. His fine analytical framework, with some revision and extension, could have covered the problems and issues arising out of the great remainder of postsecondary education as well as the lesser part so well done.

The remainder of postsecondary education appears to be even more omni-present and pervasive than that to which the Commission confined itself. For example, the Commission on Nontraditional Study finds that over 32 million adults were in some education or training endeavor in the previous 12 months. Stanley Moses of the Syracuse Policy Center made estimates several years ago which seem to be confirmed by these studies of Samuel Gould in 1973. Moses indicated that industrial, organizational, and other

agencies were influencing the educational lives of more people than were formal academies such as colleges and universities and proprietary training schools--exactly those included in the new but limited definition of postsecondary education.

We must expand our thinking and conceptual modeling if we are to understand what is already practice in the society, much less provide policy makers with some realistic view of the future. Those of us from higher education seem to have exhausted our imaginative capacities when we included community colleges and then proprietary schools in our thinking about alternatives to the four-year degree institution. We spend our time unit costing, developing management techniques, and creating analytical models for that part of postsecondary education which serves a rapidly diminishing proportion of those over 18 years of age, while ignoring almost entirely the part providing the real alternatives. Perhaps the psychic satisfaction derived from having capability to manipulate data and feed models on what we have left shields us from the reality of our losses.

The Census Bureau reported in January that the college-going rate of high school graduates had returned to about its 1962 level. Universal and mass higher education appear to have peaked in the late 1960s, and nothing on the horizon seems ready to reverse the situation. Now we talk about quality, not numbers of students, in colleges and universities, and call the condition "steady state." Rightfully, we also speak of mass education in the much broader context of postsecondary education.

Where do all the young people go if not to college? Most of them choose opportunities not covered by the definition of the commission on financing, many of them choose to enter the work force, and many do both. The military provides training opportunities for hundreds of thousands of young people--opportunities which can be later used in civilian jobs. The large industrial and business organizations not only provide workers with skills and upgrading but also increasingly offer "liberal and general education" and a chance for both lifelong learning and lifelong earning. Industry probably has the fastest growing and largest of the institutional alternatives. The YMCAs and YWCAs, churches, labor unions, and service organizations are all in the business of successfully meeting adult needs, often with courses the descriptions of which could be found in most collegiate catalogues.

It becomes increasingly apparent that adults have less concern than traditional college students about degrees and certificates, and hence avoid the horrendous matriculation traumas of degree credit enrollment by use of courses appealing because of their instrinsic worth rather than for the accretion of units toward a degree. It is just this meaningful and successful competititon which is forcing the colleges to make changes in how to teach, what means to use, and where to do it, and thus creates the problems and issues of counting and costing which Peterson so ably assesses.

It will, however, do the polity little good in the long run to consume our creative energy in order to count accurately or even get reasonably

valid unit costs for higher education unless we can comprehend the worth and contributions of the remainder and larger part of postsecondary education. Sorely needed for policy makers is not the finely developed unit costs recommended by the Commission on the Financing of Postsecondary Education: What is needed is a very gross assessment of the counting and costing of the alternative forms of training and education, as well as those identified by Peterson. Such attention would provide policy makers with a macro view of the social and economic costs of using the various educational and training forms. Public funds might then be used to skew the flow of 18 to 70 year olds toward the alternatives which are most efficient, satisfactory, and economical, or to provide the individual with the means to use any public financial contribution over a whole lifetime in ways best suited to and selected by the individual.

RESPONSE

by

William A. Goddard

Since 1966 Mr. Goddard has served as Executive Director of the National Association of Trade and Technical Schools and as Secretary of its Accrediting Commission. He helped organize the Association and served on its first Board of Directors. He was Vice-President and General Manager of the Massey Schools of Florida for over ten years.

In postsecondary education today, times have changed but people haven't. Persons seeking further education and training after passing the compulsory school age or after passing out from the twelfth grade are no different than they, or we, ever were. The numbers have changed dramatically. The word postsecondary doesn't define a new educational service, but only a broadening of the acceptability of the concept that collegiate higher education can no longer be considered as the ultimate and necessary finishing touch leading to an individual's desired level of achievement and respectability.

Until recently, students multiplied much faster than institutions so the sellers' advantages encouraged gradual acceleration of mass production techniques in a supermarket atmosphere. The shortages in the enterprise led many sellers toward riches and excesses while many buyers cued up anxiously and politely for any available rations to be doled out to them on whatever basis the sellers thought suitable. The buyers were led and

through all sorts of barriers and obstacles to assure that none but the most select would be admitted to the upper reaches of apprenticeships in the higher education structure. Only the very best conformists were admitted to the club.

This cadre of superintellectuals deserves the blessings of society for its magnificient contributions during several generations. Their disciplined pursuits and achievements toward better lives and understanding for all people should not be minimized by their gradual economic concessions and compromises. We can be confident that a hardy nucleus of sincere, dedicated scholars will survive to carry on and to regain the pinnacles of prominence and respect in intellectual development and service.

Meanwhile, however, each person in the remaining majority will, as always, continue his own pursuit of liberty and happiness with all the strengths and weaknesses of human nature, including individualism with a level of fickleness in responding to the fads and fancies of others. In the present day, the typical individual's version of postsecondary education at any particular point might be described as just one of many ways in which he may select a possibly more suitable mode of travel or a shortcut to one of the points along the road toward his self-anticipated destiny. If he chooses enrollment in a form of postsecondary education, it might well be that which seems to be easier, or faster, or more direct than the traditional four-or-more year grind to a higher entry-level job or

intellectual measure. He may choose to go only part of the way now, knowing he can easily resume his formal learning later at his convenience in almost any of the institutions he desires.

Although he can already easily commute, in most cases, to a program of his choice at a time he finds convenient with little interference with his work or fun or family, he is becoming increasingly aware that it will be even more a buyer's choice on the campus scene if he waits a little longer.

It's a new buyer's market in postsecondary education. The surviving and successful institutions will be those which can make timely matchings of their academic objective with the needs and desires of a suitable number of potential students, and then maintain a strong follow-through with an effective sales program. Education is now another enterprise in the competitive marketplace. Competition is growing. Consumer choice is the primary force in the system. Students are the decision makers and the industry is belatedly recognizing it and responding. As in retail merchandising, some of the giant full-service educational supermarkets will thrive while others change or fail. Many specialty schools in the vocational field will meet the more immediate instant-education requirements of the basic entry-level job seekers. Others will continue to offer comprehensive programs leading to ultimate advancement as well as the basic job itself.

With only twenty percent of the jobs of the '80s requiring college degrees, more student demand for the vocational sector of postsecondary education

can be expected. More students will seek the highly-specialized occupationally-oriented institutions which provide comprehensive job training for persons who wish to postpone neighborhood community college liberal arts courses until after beginning their careers. They can then combine earning with learning while advancing on their jobs as well.

Conversely, many specialized vocational schools are reporting a significant increase in the number of enrollees who previously attended community colleges and universities. One data processing school in Washington advertises only for college graduates in the local newspapers. Numerous secretarial schools around the country are specializing in training college graduates who cannot find suitable careers without further training.

The increasing emphasis on student financial aid will provide further independence for the student in exercising his academic selection. He will not only have a better choice of careers open to him, he will be able to choose freely the manner in which he prepares for and advances within the career.

One-third of the top twenty-five percent of high school graduates do not go to college but are selecting other alternatives. However, more available financial aid and stiffer recruiting competition among institutions with open admissions policies should continue to encourage increasing postsecondary enrollments among persons who previously would not have

selected formal education as an interim goal. Equal opportunity employment and affirmative action policies are also broadening many individual horizons.

For the first time, almost any person now has an opportunity to pursue his own goals in postsecondary education about any way that pleases him. Virtually all forms of postsecondary education are accepted as legitimate and valuable. The variety and free choice of individual buyers pose monumental concerns for this industry which has little experience in competing for each customer's purchase in an open marketplace.

The implications of a buyer's market in postsecondary education are enormous for researchers and planners. Increased emphasis on commercial-type market research is necessary. The new independent student from whatever background rightfully demands the same services and safeguards in education which he has learned to expect in all his other business relationships. Postsecondary educators must identify these students as individuals and be prepared to serve their individual needs and desires in the manner expected by them as consumers in the marketplace. Critical concerns should then relate directly to the number of satisfied individual customers, and institutional success should be measured accordingly.

THE LINK BETWEEN POSTSECONDARY EDUCATIONAL PROGRAMS AND OCCUPATIONS

by

Helen S. Astin

Dr. Astin is Professor of Higher Education in the Graduate School of Education at the University of California, Los Angeles. Over the past ten years she has been involved in research on career development, relationships between educational training and employment, women's educational and career development, and the impact of special and diverse programs in higher education on student outcomes.

The link between postsecondary education and occupations has always been one of the major issues in studies and policy debates on the question of humanpower development and utilization. During the last two decades a great deal has been written on this topic in an attempt to raise the important questions, to provide some answers, and to draw up guidelines for policy. Many of the same questions that were raised, for example, by the first Commission on Human Resources (Wolfle, 1954) continue to be bothersome today. Efforts are continuously being made to reexamine them and to provide a framework for action that can assure us the best development and utilization of all our human resources. For this seminar, I have been given the task of identifying the major issues surrounding this topic, to reexamine some of the old questions, and, perhaps, to raise some new ones. Hopefully, my paper will stimulate some new research and will suggest a framework for future institutional changes.

Basically, there are two main areas of concern: talent development and talent utilization. However, there are a number of issues under each area of concern:

Development

1. Are there still sizeable numbers of capable young persons who do not avail themselves of postsecondary training?
2. Who are the individuals that succeed (i.e., complete their training as outlined) or fail (i.e., drop out) in post-secondary education?

3. Do we provide the kind of educational training that permits flexibility in career development, that is, reciprocity or a kind of "balance of trade" between fields and/or occupations?

Utilization

1. Can the labor market absorb all of our trained resources?
2. Do people use the skills they have developed or the education they have acquired in the occupations they enter?
3. Do the available jobs enable individuals to implement the values they had prior to college and the ones they acquired in college?

Development and Utilization

Does more education assure one a broader choice of occupations and jobs that provide greater psychic and economic rewards?

For the remainder of this paper I would like to examine each question separately and briefly summarize whatever information we have available that (a) provides us with the necessary insights and (b) sets the stage for future research and action.

DEVELOPMENT ISSUES

1. Are there still sizeable numbers of capable young persons who do not avail themselves of postsecondary training?

In spite of the great expansion of postsecondary opportunities in recent years, there is still a sizeable proportion of young persons who complete high school but do not enroll in college. By October, 1972, only 49%

of all youth who had completed high school in 1972 had enrolled in college: 53% of men, 46% of women, 48% of nonwhite youth (Special Labor Force Report 155, 1973). Doubtless some of these young persons pursue training in noncollege centers, such as on-the-job training, or in technical and vocational schools. Moreover, a number of them most likely will pursue postsecondary education at some later date. Nevertheless, if we were to examine the figures for different subpopulations, there is no doubt that women and nonwhite men would continue to show lower rates of college attendance than would the white male high school graduates.

Besides sex and race, family background, as expressed in socioeconomic status terms, is one of the key determinants of whether people pursue college or any postsecondary training or whether they enter the world of work. In examining the proportions of persons going on to college from the various socioeconomic status backgrounds, we find that while over 90% of persons with high ability from high socioeconomic status backgrounds go on, only two-thirds of high ability, low socioeconomic status men and half of the high ability, low socioeconomic status women go to college (Folger, Astin, Bayer, 1970). Similarly, the study of Wisconsin high school graduates by Sewell and Shah (1967) indicated the importance of socioeconomic status and ability on higher education attainment. However, one has to examine some of the more recent trends in order to determine if minority recruitment and increased financial aid have facilitated access of high ability, low socioeconomic status youth to postsecondary education.

No matter how much we increase financial aid, socioeconomic status will probably continue to be a significant determinant of whether high school graduates pursue postsecondary education. Moreover, socioeconomic status seems to penalize women more than men. As long as parents continue to expect and hope that their daughters will eventually marry and be supported by someone else and that their sons will have to provide for themselves and their families, inequities between the sexes as to who receives psychological and financial support from parents to pursue education will continue.

Of course, ability and achievement also play important roles in determining who continues his or her education, but it is important to highlight the talent loss that occurs simply because a person happens to be of the wrong sex or family background, lacks sufficient finances, or has inadequate information about the value of education, where to obtain it, or how to go about pursuing it.

2. Who succeeds and who fails in postsecondary education?

Educational persistence and its measurement are complicated issues. Do we call the students who begin college and do not complete it within four years failures, or are the students who have not completed college four years after entry and who are no longer enrolled the ones who have failed, or are the students who drop out and drop in, taking five and ten years to complete college, the ones who have not succeeded? About 47% of students who enter two- and four-year colleges receive a B.A. within four years; and about 60% have a B.A. or are still enrolled four years after college entry (Astin, 1972). A followup of students attending

four-year colleges ten years after college entry revealed a remarkably high completion rate: only 16% reported not holding any degree (15% men and 18% women) (Astin, El-Khawas, Bisconti, 1973). Women are more likely than men to complete their degree in four years. However, far fewer women persist over longer time periods, so that the rate of degree completion over time is often higher among men. Students in two-year colleges are less likely to persist than students in four-year institutions. That is, one-third of students at two-year institutions do not return for a second year compared to less than one-fourth of students at four-year institutions. Black students have slightly lower persistence rates than their white counterparts. However, when we control for ability and past achievement, Blacks are as persistent or even somewhat more persistent than non-Blacks of similar abilities.

Besides ability and past achievement, finances can be a very important determinant of whether or not a student persists. Students have a better chance of staying in college if they receive a major part of their financial support from parents, from scholarships, or from personal savings. On the other hand, students have less of a chance of staying in college if they are employed during the school year (Astin, 1972).

Abilities, socioeconomic status, and sex are again found to be important determinants of educational progress and attainment. If we value educational attainment, we have some responsibility to override these barriers by whatever assistance we (the society) can provide. We can help students financially and we can enrich young persons' experiences as a way of

to overcome the barriers resulting from traditional patterns of socialization.

3. Do we provide the kind of educational training that permits flexibility in career development?

The issue of training for flexibility in occupational development represents one of the most important and critical areas of concern for educators and policy makers. There is a great deal of career indecision during one's educational development. High proportions of both men and women shift in and out of various occupational groupings during their undergraduate years. The proportion of undergraduate college men who hold the same career plans as freshmen and as college seniors ranges from a high of 56% (school teacher) to a low of 7% (mathematician). Overall, the most stable initial plans are for careers in teaching, law, engineering, and the health fields, in that a relatively high proportion of students planning such careers maintain their plans over time. Those with career plans in the sciences show the lowest stability rates.

It is easiest to understand the high stability rates for teaching. One can plan to major in a certain discipline, change one's mind about the field of concentration, and still plan to be a teacher. Engineering may have a high stability rate because engineering training is very specialized. Required courses in this discipline are not easily transferable to other fields or career preparations. Engineering has few recruits from other fields because not many students accrue credits that can be applied to an engineering major.

The social sciences and, in part, the arts and humanities provide the kind of educational preparation that permits people to shift readily in and out of fields. Examining changes in career aspirations over time, we observe that some fields, because of their early specialized training, prohibit people from entering them later on. Engineering, physics, and medicine recruit very few students from nonscience fields. On the other hand, we find that other fields prepare people for occupations that draw from a variety of disciplines. For instance, law and business draw students from all disciplines.

How can we arrange for the kind of curricular flexibility that is responsive, in part, to students' early career indecision and to the labor market fluctuations? One could conceptualize an undergraduate curriculum that is totally geared to the development of skills that have interfield and interoccupational transferability. That is, we can design curricula that develop the kinds of competencies deemed important across occupations. In essence, the courses can be designed to develop competence in mathematics, languages, and communication, as well as interpersonal skills and skills in systematic inquiry or research. This list of competencies is intended to include those that could be important in performing tasks in a wide variety of occupations that persons might enter after they complete college. However, it might be more meaningful first to examine the skills and competencies of workers in a variety of jobs and work settings, then to identify those competencies that are common across occupations, and finally to design postsecondary programs to develop these competencies.

Such a model is in preparation and being implemented at the College for Human Services in New York City. The College is currently operating a two-year program of competency-based education that prepares students to become professionals in the human services. The educational experience is organized around performance outcomes expressed in the form of competencies in human services. In developing the program, a set of competencies was first derived and then tested in the field by observation and analysis of behaviors exhibited by sixty-five professionals in human services who had been judged as distinguished by their peers. Currently, curricula are being prepared in order to develop these competencies in the students. Theories, as well as empirical data, that exist in the various disciplines provide the substance and tools in the design of classroom experiences which are geared to facilitate the students' development of particular competencies. Simultaneously, students participate in an actual work experience, which is designed as an integral part of this educational program.

Thus, one can envision college graduates who have acquired generalizable competencies and who are ready either to enter the world of work in fields that interest them and in which there are openings or to continue their educational training (graduate or professional school) and acquire the necessary knowledge to become experts or scholars in their disciplines. Of course, this proposal demands that the early work years provide apprenticeship experiences and that employers assume responsibility for providing whatever skills are unique to an occupation in order for one to perform well.

There is no question that efforts of this sort have larger implications for the effectiveness of postsecondary institutions, not only in developing young people, but also for meeting the educational needs of adults. Many adults express needs for recurrent education as they plan midlife career changes and as new skills become necessary to replace old outmoded ones. The external degree programs have struggled with the questions of academic credit for life experience and credit for work experience. What judgments does one make? On what basis or using what criteria does one translate work experience into academic credits? Since such judgments assume that academic work provides training for the world of work, solutions to these questions will enable us to match classroom or course objectives to the kinds of competencies exhibited or tasks performed on a given job.

Many critics of competency-based education would argue that education is not designed exclusively or even primarily to enhance job performance. What about some of the "private benefits," i.e., noneconomic benefits such as a meaningful life, satisfaction, fulfillment, self-actualization, and so forth? My thesis on the model proposal begins with the premise that job performance involves all of the above. Doing a job competently implies that you are making a societal contribution--a form of fulfillment and a source of satisfaction. When you do a job well, your self-esteem is enhanced and, thus, you provide yourself with experiences toward a greater self-actualization. Another plaguing question--and a bothersome one for many--is what will happen to the arts with the proposed model? They rightfully ask, would you deny students exposure and experience in the realm of art? Aren't such experiences important

in one's development and fulfillment in life? Of course they are. I would be the first one to support the arts as a means to an end, a way of enriching one's life experience, and as an end in itself, developing skills to become a performer, a practitioner in one of the arts. In accomplishing these ends, I would like to see the media and other nontraditional "institutions" providing for these experiences as well as postsecondary institutions. Moreover, the need for participation in the arts can be met by centers in state- or city-funded community facilities. As far as training for the arts, special institutions where the total curricular program is designed to develop the necessary skills and competencies in the visual and performing arts should exist and be supported.

UTILIZATION ISSUES

The term "utilization" of human resources ordinarily relates to questions of employment, unemployment, and underemployment. Let us examine the first and most basic question that is raised.

1. Can the labor market absorb all of our trained resources?

In a recent survey of college educated youth, we found that among students who began college in 1961, the patterns of activity ten years later in 1971, were as follows:

	%
Working	73
In military service	3
Unemployed and looking for a job	1
Unemployed and not looking	1
Housewife	15
In school	8

At first look these statistics might reassure us that there is little unemployment of college-trained persons. From another perspective, however, about one in four of these persons is not in the labor market; they are either in the military, at home, or in educational training activities. Some of them are there by choice. But often persons engage in such activities because there are no options in the world of work. If there are limited job opportunities, a person can decide to return to school, to go into postbaccalaureate training, to join the military, or to remain at home and be a "housewife." Furthermore, of the men who were neither working nor studying full-time in 1971, 13% claimed to have left the job because of company cut-backs; 14% could not find a job appropriate to their qualifications, and 26% were unemployed by choice either because they did not want to work or because they wanted to travel. Of course, there were a variety of other reasons and pressures, such as moving to a new location, family responsibilities, health problems, and so forth.

In another survey of employment patterns of college graduates (Special Labor Force Report 151, U.S. Department of Labor, 1973), 92.9% of BA and advanced degree recipients of 1970 and 1971 were in the labor force in October of 1971, that is, were either in jobs or were looking for work. Of persons not in the labor force, two-fifths, mostly women, cited family responsibilities as their reason for not working. The rest named imminent entry into the armed forces, not wanting to work, or plans to continue their education. Among the unemployed, the majority attributed their unemployment mainly to the unavailability of jobs.

These brief statistics suggest that while there has been some talent loss because of unavailability of jobs and because of company cut-backs that force people out of work, there are also other factors that determine whether or not people are in the labor market and whether or not they are employed.

Basically, if we look at the numbers and proportions of persons employed or not employed at a given time, the more important questions are whether people remain without work for any periods of time and whether they are forced to take jobs for which they were not trained or jobs that do not satisfy their interests. The Special Labor Force Report provides some data on the first question. About 60% of the degree recipients experienced no unemployment between the degree and the first job. Among the remaining two-fifths, half looked for about four weeks or less before they found a job and less than 10% looked for 27 weeks or longer. While these statistics could be interpreted as relatively encouraging, we must next ask the second critical question.

2. Do people use the skills they have developed or the education they have acquired in the occupations they enter?

The answer to this question has implications for the kinds of educational experiences and training provided in the world of work today, as well as for the kinds of satisfaction and fulfillment persons have from participation in the occupational arena.

Let me briefly summarize the available data. In the survey of employment of recent graduates by the Labor Department, respondents were asked directly to provide answers to the question of whether their job related to their major field of study and, if it did not, what the main reasons were. The answers were as follows: directly related 49%, somewhat related 18%, not related 32%.

In terms of field differences, greater proportions of persons in the social sciences and humanities were in non-field-related job placements than were those from business and education. This is not puzzling by any means. Business and education provide specialized professional training that easily translates to job opportunities in the corresponding sectors of the world of work. On the other hand, the humanities and social sciences provide training that is often not directly translatable into relevant work. A social scientist could obtain work in a social science research enterprise or teach a social science. A person with a background in humanities can teach in the humanities or utilize some of the skills in a job that relates peripherally (editing, for example). These data do not, of course, provide us with information on how satisfied persons are or whether they have found their humanities or social science training useful in what they are doing today.

Over 50% of those working in nonrelated jobs claim that the main reason was limited options, e.g., "it was the only job I could find." However, we should be cognizant of the fact that 20% of the persons who reported being in non-field-related jobs choose these jobs because

of better opportunities for advancement, as a way of exploring new areas, and because they did not want to work in their own field. The remaining two-fifths gave a variety of other reasons. From these results, it would seem important next to determine how adequately these persons perform, what useful skills they possess, how their past educational training accounts for these skills, and how satisfied they are with their jobs. The fact that one-third of college graduates ended in non-field-related occupations implies that there was no relationship between the skills and competencies developed in college and subsequent performance on the job.

The Special Labor Force Report looked primarily at the proportions of persons describing their jobs as relating or not relating to their field of study. In a more recent survey the question was raised somewhat differently: Did you get a job offer? Did you get a satisfactory or an unsatisfactory one? Examining the prospects of graduates of 1972, as of September of the same year, the results are as follows:

Table 1

Graduates of 1972: Employment Prospects
(in percentages)

Major Field of Study	Unsatisfactory Offer		No Offer	
	Men	Women	Men	Women
Total all Fields	7	7	11	11
Arts and Humanities[1]	7	10	21	10
Literature	6	9	12	8
History	11	7	12	10
Modern Languages	21	12	2	12
Drama	2	12	77	19
Biological Sciences	8	8	11	15
Business	7	5	8	12
Business-Accounting	3	2	6	23
Business Administration	9	9	10	13
Engineering[2]	5	-	7	-
Physical Sciences	5	5	9	10
Chemistry	1	1	11	18
Math	8	5	7	7
Physics	5	0	15	4
Education	4	5	4	11
Social Sciences	10	7	14	13
Political Science	5	9	9	8
Psychology	7	9	10	14
Sociology	11	10	13	22
Communication	15	18	21	4
Library Science	9	15	12	11
Nursing	-	1	-	1

Note: Data were obtained from the 1972 survey of college students entering college in 1968, American Council on Education.

1. Under each major category some examples of individual fields are listed.
2. The few women (N=392) had offers for either full- or part-time jobs.

Eighty-two percent of the class of 1972 had received satisfactory offers as of the time of the survey. Seven percent had offers that did not meet their expectations. There are great variations observed between fields, from a very low proportion of women nurses (2% who either had no offers or unsatisfactory offers) to a high proportion in communications (36%). Arts and humanities and social sciences again appear to be the areas in which persons are likely to feel that they have not found appropriate jobs or any jobs.

This leads us to the question of career expectations, job opportunities, and job placement. Using data from a national survey,[1] Bisconti examined the relationship between early career plans and actual occupations later on. On the basis of [illegible] career expectations in 1965, she analyzed the occupations held in 1971 by the college class of 1965. Seventy-one percent of men planning for business careers in 1965 were employed in business-related occupations in 1971. Among students planning for engineering careers in 1965, 68% were in engineering jobs in 1971. Where one again sees major discrepancies between expectations and jobs is in the natural sciences and in the social sciences: 19% of persons expecting careers in natural sciences had such jobs in 1971. A relatively high proportion (12%) had gone into engineering jobs and 16% were teaching in elementary and secondary education. Similarly, with social sciences only 3% were holding jobs in the social sciences. The rest were either in teaching or in jobs that were not identified as "social

1. Bisconti, A. S., "Career After College: The Relation Between Career Plans and Outcomes." Monograph for the College Placement Council (forthcoming).

science." Again a word of caution is necessary here. The job title does not necessarily provide information about what tasks are performed and whether these tasks are better performed if the person has been trained in the humanities, natural sciences, or social sciences. Thus, the question of relevance between training and jobs remains moot.

There is no question that in future research on the issues of links between education and occupation, we must make greater attempts to measure task performance and to relate such measures to the acquisition of specific skills and competencies during college training, rather than relating occupational titles to field of study or career expectations.

The great complexity involved in trying to "match" education with jobs is illustrated in a recent paper by Bisconti and Solmon (AAAS, 1974). These investigators were interested in determining "who" ends up in jobs unrelated to their training and "why." Basically, they attempted to look at some personal characteristics of these individuals. They also compared the employee's perception of relatedness (training to occupation) to an ad hoc determination of relatedness.[2] In a pilot examination of two of the occupations, chemistry and engineering, the authors concluded that there is greater agreement on the issue of relatedness than on the issue of remoteness. That is, more of the respondents felt a relationship between training and occupation than would have resulted from the a priori classification of remote occupations. This supports, in

2. The investigators classified occupations on a priori judgments about their relationship to field of study. For example, if a physical science major indicated that he was a natural scientist, the employment was seen as "related."

part, my hypothesis that occupational title often does not adequately describe how well an occupation or job permits a person to utilize acquired skills.

In an attempt to examine the possible antecedents and consequences of working in a remote job, these researchers looked at college grades and job earnings. Overall, people in remote jobs had similar grades to people in related jobs. Differences did appear, however, when the data were examined by sex and by field. Among men who had majored in education or in social science, for example, those in remote jobs had better grades than did those in related jobs. Conversely, among men who had majored in the arts and humanities or engineering, those who ended up in remote jobs had lower grades. In general, among those who ended up in remote jobs, men earned less and women earned more than their counterparts in related jobs.

To some extent, men and women plan their career development with somewhat different orientations and values. There is some evidence that the career decisions of men are influenced as much by extrinsic rewards (e.g., salary, status) as by intrinsic rewards (e.g., the work itself), whereas women are more likely to be influenced by intrinsic rewards. Such findings suggest that the results of the Bisconti and Solmon study can be explained on the basis of the sex typing of occupations and the associated reward structure. That is, jobs more often occupied by women (e.g., teaching or nursing) are generally less well paid than jobs that are regarded as more "masculine" (e.g., engineering or business sales), even though they may require equal amounts of formal schooling. While it seems

likely that men are attracted to "masculine" jobs in part because of the greater anticipated extrinsic rewards, it may also be that such jobs have acquired relatively high pay and high status because they have typically been filled by men.

In short, these findings suggest that the "fit" between education and work cannot be assessed solely in terms of some a priori classification of jobs and fields of study. Whether or not training is "relevant" would seem to depend upon the type of job category, the field of study, and the characteristics of the person. We have already seen that sex can be an important correlate in the perceived degree of relevance; in all likelihood further research will show that other personal attributes--such as socioeconomic background and race--are equally important mediating factors.

3. Do available jobs provide opportunities for implementation of one's values?

Persons differ with respect to their value systems and also with respect to values that can be implemented via work. When 1972 graduates were asked to indicate their reasons and the importance of these reasons in planning their long-range careers, more women placed a greater value on intrinsic rewards than did men, who indicated considerations that carried greater extrinsic value.

In addition to sex differences, we have observed differences in occupational values among people pursuing different careers.

Table 2

Reasons Considered Very Important
In Making Long-Range Career Plans (Class of 1972)
(in percentages)

Reasons	Men	Women
Job openings available	23	25
Can make important contribution	40	51
Enjoy helping people	45	68
Enjoy working with ideas	56	59
Enjoy working with hands	17	18
Opportunity for self expression	43	50
High prestige	17	8
Opportunity for independence	53	45
Rapid advancement	30	10
Stable future	48	39
Well paying career	29	16

Tables 3 and 4 list the zero order correlations between selected occupational values and career choices separately by sex. There are indeed differences among fields with respect to values. However, the extent to which such values determine the choices is hard to ascertain with the above data. Persons may choose certain careers in order to implement their personal values, but they may also espouse certain values simply because they have chosen the particular career. Long-term longitudinal studies appear to offer one means of testing these alternative interpretations. Moreover, to what extent are people with various values able to pursue the occupations that provide an outlet for these values? Are persons in certain types of jobs forced to compromise their values? Are compromises more likely to be necessary if the person ends up in an "unrelated" occupation?

These questions are as yet unanswered. If we are concerned with the question of whether or not the labor market permits the implementation of personal values (some of which were reinforced in college and others were developed there), future research has the responsibility to examine these relationships in greater depth, the implication being that such findings might suggest restructuring certain educational experiences, job requirements, and job environments in order to provide for better match of persons and jobs.

Table 3

Correlations[a] Between Occupational Values and Career Choice Among Women
(N = 3,647)

Career Choice in 1971	Job Openings Generally Available	High Earnings	Autonomy	Chance for Originality	Make an Important Contribution to Society	Work with Ideas
Social scientist	.04	-.03	.09**	-.01	.08**	-.03
Engineer	-.00	.01	-.01	-.02	-.02	-.00
Physical scientist	.02	.01	.02	.05	-.01	.03
Biological scientist	-.03	-.03	.08**	.03	-.03	.03
Physician	.02	.05	.09**	-.04	.05	-.04
Mathematician	.02	.03	.02	-.01	-.03	.03
Housewife	-.07*	-.08**	-.13**	-.06*	-.08**	-.11**
Lawyer	-.02	.10**	.08**	.01	.04	.02
Health professional	.17**	.04	-.06*	-.10**	.04	-.08**
School teacher	.02	-.13**	-.15**	.09**	.18**	.08**
College teacher	-.03	-.05	.19**	.07*	.03	.14**
Business executive	-.05	.24**	.03	.00	-.13**	-.01
Artist, writer	-.05	-.02	.04	.12**	-.05	.07*
Undecided, none	-.03	-.02	.01	-.03	-.07*	-.03
Other	.02	.01	.00	-.05	-.08**	-.04

a/ Zero-order r
* p = < .05
** p = < .01

Note: Table reproduced in full from the Final Report, Beyond the College Years, Astin, El-Khawas, and Bisconti, 1973.

Table 4

Correlations[a] Between Occupational Values and Career Choice Among Men
(N = 4,689)

Career Choice in 1971	Job Openings Generally Available	High Earnings	Autonomy	Chance for Originality	Make an Important Contribution to Society	Work with Ideas
Social scientist	.05	-.05	.06*	.04	.07*	.02
Engineer	.05	.01	-.09**	-.00	-.06*	.02
Physical scientist	.01	-.08**	-.01	.07*	-.05	.03
Biological scientist	-.01	-.09**	.03	.06*	.04	.04
Physician	.04	.03	.11**	-.07*	.13**	-.08**
Mathematician	-.02	-.03	-.01	-.00	-.00	-.00
Lawyer	-.04	.14**	.12**	-.03	.09**	.02
Health professional	.03	-.03	-.03	-.00	.03	-.01
School teacher	.06*	-.16**	-.07*	.00	.09**	.01
College teacher	-.04	-.18**	.14**	.10**	.07*	.13**
Business executive	-.05	.29**	-.06*	-.04	-.19**	-.04
Artist, writer	-.04	-.06*	.05	.10**	.06*	.08**
Undecided, none	-.02	-.06*	.03	.02	-.03	-.00
Other	.05	-.07*	-.09*	-.03	.00	-.05

a/ Zero-order r
* p = < .05
** p = < .01

Note: Table reproduced in full from the Final Report, Beyond the College Years, Astin, El-Khawas, and Bisconti, 1973.

DEVELOPMENT AND UTILIZATION ISSUES

The last question deals with the benefits realized by the individual on the basis of the amount of education he or she receives.

Does more education assure one of a broader choice of occupations and jobs that also provide for greater psychic and economic rewards?

In one sense, this question encompasses the same issues raised in our earlier discussion of talent development and utilization. Questions of employment, unemployment, and underemployment become even more critical when one has invested greater amounts of time and money in the educational process.

Regarding the question of employment and unemployment, the 1970 survey of doctorates earned in 1969-70 provides some partial answers.

Employment Prospects of Doctorates (1969-70)

(in percentages)

Prospects	Men	Women
Signed contract	78	65
Negotiating	8	10
Seeking, but no prospect	9	17
Other	5	8
Postdoctoral study	15	13

(N = 29,436)

Considering the high level of training involved, these results are not very encouraging, especially for women. Moreover, we do not know the extent to which the jobs these doctorates have accepted or are negotiating for are directly related to their training. Nor do we know whether these jobs permit them to fully utilize the specialized skills and competencies they have acquired in graduate training.

The data do clearly show that monetary rewards are greater for persons with doctorates than for persons with less education. In our recent 1971 survey of the class of 1965, we found that income increased directly with amount of education. For example:

Level of training	Income less than 10,000	Income more than 20,000
Less than B.A.	43%	4%
B.A.	31%	5%
Master's	28%	10%
Doctorate or professional degree	17%	28%

Perhaps a more critical question with respect to rewards is whether persons with more education have a broader choice of occupations. Also, do the occupations they pursue provide for greater implementation of values?

Table 5

Occupations by Level of Training: Men
(in percentages)

Selected Occupations	Less than B.A.	B.A. only	Advanced degree
Business related	32	34	12
Trades	22	2	-
Professions			
Social Worker	-	1	2
Scientist	-	2	2
Teaching (Elementary)	-	3	3
(Secondary)	-	13	14
(College)	-	1	11
Research Assistant	-	1	2
School Counselor	-	-	1
Pharmacist	-	2	-
Librarian	-	-	1
Lawyer	-	-	11
Physician, Dentist	-	-	9
	N = 67,967	189,119	130,858

Note: Table is abstracted from New Perspectives on the College Dropout (forthcoming) by E. H. El-Khawas and A.S. Bisconti.

Table 6

Occupations by Level of Training: Women
(in percentages)

Selected Occupations	Less than B.A.	B.A. only	Advanced degree
Housewife	39	20	1
Secretary	20	3	1
Allied health	8	6	3
Teaching (Elementary)	2	23	17
(Secondary)	-	17	18
(College)	-	1	14
School Counselor	-	-	2
Librarian	-	1	4
Lawyer	-	-	4
Physician, Dentist	-	-	3
Scientist	-	1	3
Social Worker	-	4	4
	N = 60,922	164,129	62,845

Note: Table is abstracted from New Perspectives on the College Dropout (forthcoming) by E. H. El-Khawas and A.S. Bisconti.

From the data in Tables 5 and 6 it is evident that persons with advanced degrees are more likely to engage in professional work, whereas persons without the B.A. work primarily in trades and business. The picture is even more dramatic for women. While 59% of women with less than the B.A. degree are either housewives or secretaries, only 2% of women with advanced degrees find themselves solely in these roles. However, the question of implementation of values still remains unanswered. We may suppose, of course, that professional work usually provides the individual with greater autonomy and with more opportunities to work with people and ideas. Nonetheless, we still do not have any direct knowledge that persons who value such job characteristics actually end up in these occupations. There are also possible mitigating features: a person in a job that provides more autonomy also experiences more responsibility and less structure. And what of the nonprofessional jobs? Are the people who most value, for example, working with their hands the ones who end up working in the manual trades?

In short, we are still a long way from understanding how early values affect educational choices, and, later on, how they interact with the labor market to determine career progress. Answers to these questions will depend on the extent to which we are willing to invest in research which deals with questions of values. While some humanpower planners and even some educationists may regard such questions as trivial or even irrelevant, the fact remains that our system of postsecondary education

is in large part dedicated to the development of the individual's personal values. Whether or not and under what conditions such value development occurs, whether or not the occupational structure is providing adequate means for implementation of such values, and whether or not such values may even be dysfunctional, are critical questions which could have profound implications for our postsecondary educational system.

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RESPONSE

by

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Before turning to Dr. Astin's paper, I should like to offer several observations about the nature of the linkage between educational qualification and occupational assignment. An occupation refers to a group of jobs in the productive process that are functionally more or less homogenous, i.e., that involve a relatively common set of tasks or operations the incumbents are expected to perform. Conceptually, the link between educational programs and occupations is provided by the assumption that certain types of general and vocational education develop patterns of skill, knowledge, and affective behavior essential to, or at least highly desirable for, the performance of corresponding occupational functions.

It is important to know to what extent this linkage exists in fact. Vocational guidance obviously depends upon knowing what educational preparations are appropriate for entrance into specific occupations or, conversely, what occupational opportunities are available to the graduates of specific educational programs. Manpower and educational planning also require such understanding. To the extent that social investments

in education are to be guided by manpower considerations, forecasts of occupational structure must be converted into their educational equivalents. Whether this is a reasonably straightforward process depends upon the strength of the link between educational qualification and occupation.

That there is such a link is indisputable. The pronounced relationship between educational attainment and occupational assignment constitutes persuasive evidence.[1] But while the link exists, it is far from a rigid one for most occupational categories. Conceptually, the relationship would be a rigid one only if every occupation were perfectly homogeneous with respect to required patterns of skill and knowledge and if a given pattern of skill and knowledge were uniquely associated with a particular educational background. It is doubtful that these two conditions prevail for any occupation; however, for all practical purposes they may be said to exist for occupations involving certification, such as the legal, medical, and teaching professions. Aside from such examples, the relationship is ordinarily attenuated, so that individuals with identical amounts of education are found in occupations at substantially different levels,[2] and individuals within reasonably narrow occupational categories (three-digit Census codes) have a wide range of educational attainment.[3]

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[1]Christopher Jencks et al., Inequality: A Reassessment of the Effect of Family and Schooling in America (New York: Basic Books, Inc., 1972), p. 191.

[2]Loc. cit.

[3]Herbert S. Parnes, "Relation of Occupation to Educational Qualification" in H.S. Parnes (ed.) Planning Education for Economic and Social Development (Paris: Organization for Economic Cooperation and Development, 1962), pp. 148-9.

A number of factors help to explain this. First, even the narrowest occupational designations used for statistical purposes are quite heterogeneous in terms of the levels and kinds of knowledge and skills required. Second, very few educational programs even purport to be specific to a single occupation. Third, skills and knowledge are commonly acquired through means other than formal education--particularly through work experience. Finally, even when educational background and occupational assignment are related, it is not clear whether the relationship is attributable to the functional relevance of the education or to the fact that the education has served as a credential to provide admission to the occupation.[4] To the extent that the latter is the case, such credentialism may not be universal.

It should be noted that whether individuals who complete a particular educational program actually enter relevant occupations addresses only one aspect of the education-occupation linkage. The other aspect concerns the extent to which occupations for which relevant educational programs exist are filled by persons who have not had the benefit of them. Ideally, one would wish information not only on the numbers of such persons, but also on the quality of their job performance relative to the performance of incumbents who have gone through the relevant educational program.

Now let me attempt to relate all of this to some of the themes of Dr. Astin's interesting paper. To begin with, I assume, as apparently

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[4]Cf. Dael Wolfle, "To What Extent Do Monetary Returns to Education Vary With Family Background, Mental Ability, and School Quality" in Lewis C. Solmon and Paul J. Taubman (eds.) Does College Matter? (New York: Academic Press, 1973), p. 73.

she does also, that our concern with improving the "fit" between educati and ultimate occupational assignment is motivated by considerations of both economic efficiency and individual welfare. From both these points of view I find persuasive her recommendation for building the greatest possible flexibility into undergraduate educational programs and for relying more substantially on on-the-job training for the skills and "know-how" unique to a particular function. Increasing the range of opportunities in this way preserves the greatest freedom of choice for the individual at the same time that it permits the economy as a whole to adjust most readily to technological change and to changes in the pattern of demand for goods and services.

The data summarized by Dr. Astin on the adequacy of utilization of persons with postsecondary degrees point up the difficulties inherent in making such an assessment. As she observes, comparison of job title with field of educational preparation is not a particularly trustworthy means of ascertaining whether a worker's education is being used on the job. Indeed, there is some reason to doubt that even asking individuals whether they utilize their training in their jobs will fully uncover the subtle ways in which educational background contributes to the performance of most jobs. In view of this, perhaps the most important question to ask is not whether there is a "fit" between education and work assignment, but whether the individual finds his work satisfying. It is in this context that I find particularly appealing Astin's suggestion for research on the degree to which occupational assignments provide psychic rewards and are consistent with the value structures of those who hold them.

With respect to whether "the labor market can absorb all of our trained resources," there are two points that I find missing in Astin's analysis. To begin with, given the very substantial variation in the quality of educational programs and in the aptitudes and motivation of individuals, one would expect variation in the extent to which the graduates of such programs are able to find satisfying jobs relatively easily. Too many of the surveys that have been made on this subject have tended to treat the graduates of specific programs as undifferentiated groups of potential workers.

Second, consideration needs to be given to the phenomenon of educational upgrading over time, as the relation between the supply of and demand for various categories of manpower changes. Historically the labor market has indeed absorbed increasing proportions of manpower with postsecondary education, but one of the ways in which this occurred was through the redefinition of the educational "requirements" of particular occupations. Public school teachers and business managers are two fairly obvious examples. The process has been a subtle one, and it is not entirely clear whether redefinitions of jobs have altered educational requirements or whether the influx of better educated personnel has changed the character of the occupations.

In any case, it seems clear to me that the process has been a salutary one--particularly in view of the fact that postsecondary education serves other than vocational purposes--and equally clear that there is no reason

to expect it to cease. It was not too long ago that the requirement of university education for police officers would have been regarded as absurd, but a Presidential commission has recently recommended the goal of baccalaureate degrees for all law enforcement personnel.[5] It seems clear to me that, other things being equal, the quality of law enforcement would be improved by the implementation of this proposal, to say nothing of the effectiveness of police officers in the other spheres of their lives.

This process of educational upgrading can go a great deal farther. Individuals with given postsecondary degrees may not be able to do as well, relatively, as their counterparts in the previous generation, but they may nevertheless be able to do well enough to make them willing to undertake the education. Thus, the process is a self-regulating one, so long as there is sufficient information on current labor market conditions and probable future trends to permit rational educational decisions to be made.

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[5] Ibid., p. 72.

IMPROVING THE EFFECTIVENESS OF POSTSECONDARY EDUCATION POLICY RESEARCH IN THE LEGISLATIVE PROCESS

by

Robert C. Andringa

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The spirit and motivation behind this conference and the papers that have been prepared for it reflect positive advancements in postsecondary education policy analysis. During the past six months there has been a more serious approach to the need for improved data gathering and analysis than at any time since 1969 when I joined the Staff of the Education and Labor Committee. Perhaps I was not aware of what was going on in previous years (entirely possible), but my colleagues on Capitol Hill share the view that something new is happening.

Two and one-half years of deliberation leading up to the Education Amendments of 1972 exposed considerable gaps in higher education policy analysis. Looking back, the Higher Education Act of 1965, the first comprehensive federal legislation in higher education, was proposed by a Democratic President and easily won favorable support from a Democratic Congress. The House subcommittee had only 13 days of hearings on the legislation in Washington over a seven-week period. Not many were demanding or offering hard data or analysis to support the proposals. This came during a period when higher education was enjoying almost unquestioned public support.

During 1970-72 things were different. The higher education community finally got support for general institutional aid from some Members of Congress. Other Members were talking about major new thrusts in student assistance. Reports on financial distress made front page news.

A Republican President had made a comprehensive proposal for new higher education legislation that won only modest support on the Hill. The country had just gone through a trying period of campus unrest. The public's faith in academia seemed to be eroding. These and other factors contributed to a hard, spirited debate within the Congress about the future direction of federal support.

After endless and unfruitful discussions in 1971, key leaders of both the House and Senate began to ask specific and pointed questions about the financing of higher education. Not many answers were forthcoming. In fact, it appeared that neither the national associations nor the individual campuses were interested in developing responses based on good information or analysis. True, some of the questions being asked waited for political consensus more than scholarly analysis. But it was the perceived disinterest--even hostility to seeking well-grounded answers--on the part of the educational community which seemed to prompt the most critical comments around Capitol Hill.

For a year or so nothing much happened (I think all of us needed some time for recuperation after the passage of the legislation). Recently, however, more and more organizations are approaching us with solid information and new research agendas. The American Council on Education has launched an ambitious Policy Analysis Service. The College Entrance Examination Board has developed several research tasks directed to questions being raised in Washington. We are trying at least to scan

the many reports on postsecondary education that have rolled off the presses in the last several months. There is now motion. The need for better direction, sharper focus, improved coordination, and proper timing remain.

In this paper, I would like to discuss some of the dimensions of the legislative process and a few ideas for more effective data collection and analysis. In doing so, I acknowledge a perspective which does not fully reflect the legitimate needs and problems of users other than Congress.

CURRENT SOURCES OF INFORMATION

Counting both House and Senate, there are perhaps 25 to 30 different congressional offices where one or two people have a formal responsibility for keeping abreast of substantive current information about postsecondary education. The respective majority and minority staff persons working with Members on the Education Subcommittee of the Senate Labor and Public Welfare Committee or the Special Subcommittee on Education of the House Committee on Education and Labor probably invest the most time in this area.

What is important to understand is that each Member and each staff person operate quite independently of the others. There is almost no cooperative effort to systematize data collection, organize unsolicited data, or disseminate information once received.

Each separate office makes requests to the Library of Congress, the General Accounting Office, HEW, or some nongovernment organization whenever it wishes and usually without informing others.

With a few modest exceptions, congressional staff never have hands-on experience with automated data processing systems. We do, however, make requests to government and nongovernment agencies for information or analysis requiring the use of computers. Generally, committees have no way to spend their own money for such services.

Soon after the Education Amendments of 1972, a dozen House and Senate staffers met over lunch to discuss our common needs for better policy research. Interest in working together to stimulate new resources was lukewarm at best. Although most sensed the need for better information, a number of factors contributed to no further action on a cooperative basis--the tradition of autonomous staff effort, considerable pressures to accomplish more immediate tasks, a general uneasiness and unfamiliarity with the technical aspects of research, and some feeling that the post-secondary education community should justify its own needs if it wants federal support.

There are perhaps twenty-five organizations that provide our committee with fairly regular data on postsecondary education. These include HEW, a handful of research centers, a few state agencies and national education associations, and some private organizations. Perhaps seventy-five percent of the input--to make a very rough guess--is unsolicited and the rest is provided in direct response to a specific request.

Not to be overlooked is the powerful impact of one person who writes a Member of Congress with whom he has developed a trust relationship over the years. Quite often, a simple chart or list passed along in this way--reflecting the experience of one state, or one school, or even one individual--will influence a decision as much as the report of a $1 million research project.

These are some of the conditions that now exist which we must recognize in discussing future efforts. One of the mistakes of the research community--at least those who want to be engaged in policy research for the real world--is to disregard or dismiss the way decision makers operate and proceed in a manner which seeks the approval of other researchers.

My own feeling is that government decision makers must look more to better data systems and policy research and researchers must function more in response to the needs of decision makers.

The rhetoric in support of building these bridges to a common ground is coming from both sides. The difficult, day-to-day work in bringing policy analysis closer to policy making is likely to depend more on the analysts because the decision makers are hard pressed on all sides by a multiplicity of problems and issues begging for attention. Besides, the policy makers know that decisions get made with or without good data!

WHAT DO DECISION MAKERS NEED?

The information needs of decision makers are hard to generalize and harder to predict. Many would say that the need is not for more data, but for the right data at the right time. The problem is that "the right time" is often not known more than an hour in advance!

Some useful observations might be classified under three main categories of information: (1) basic descriptive data, (2) evaluation of present policy, and (3) analysis of alternatives.

Basic Descriptive Data

The most frequent requests for information fall in this category. A policy question is raised or a position is taken by one person, which is challenged by another. The two parties then agree they do not have all the facts necessary to make a sound judgment. In such a case, they would not ordinarily ask someone to analyze the whole issue and come up with a conclusion. They are willing to make the value judgment as soon as their assumptions are confirmed (or denied) by some sort of data.

From my perspective, these several hundred ad hoc requests for information from Members or staff are legitimate and reasonable. Why is it, then, that we almost always (or so it seems) get the response, "Our data aren't collected in a way to give you that information"?

Usually, our first stop is the Office of Education. Our complaints about the data there are familiar:

(a) The information available is too old to make a convincing argument.

(b) The data are not broken down "that way."

(c) Very little longitudinal data are collected.

(d) Information about postsecondary education has been restricted almost entirely to the "collegiate" sector.

These problems should not exist. The Education Amendments of 1972 reiterate again that "the purpose and duties of the Office of Education shall be to collect statistics and facts showing the condition and progress of education in the United States and to disseminate such information...as shall aid the people of the United States in the establishment and maintenance of efficient school systems...." The fact is, however, that we have not put a high enough priority on staffing and funding this effort. The USOE has been forced to use its scarce salary and expense monies to administer over 100 operating programs. Service functions come out a poor second to administrative responsibilities.

The Senate amendments to the Elementary and Secondary Education Act contain a provision establishing the National Center for Educational Statistics as a separate and co-equal partner with NIE and USOE on the HEW organization chart. A seventeen-member Advisory Board would give direction to this new agency.

Is this a useful road to take? Or should the Congress simply adopt a separate and specific budget authorization for the present NCES within the Office of Education? Those who use NCES data should be making their views known on this issue in the coming weeks.

Whatever the organization, there is no doubt that the federal government should assume primary responsibility for collecting and disseminating basic data. These data should be immediately available to all users through remote terminals and summary reports, even when they must be classified as "raw unedited data." There is the assumption that edited data (i.e., the totals add up) are accurate data (i.e., the figures supplied by institutions are correct). With changes in education taking place so rapidly, I would usually prefer current raw data to two-year-old edited data.

Another frequent suggestion to the National Center has been to collect some data through sampling techniques rather than surveying the whole universe. Evidently there are users who need universe data. But I wonder if that should preclude the collection of some data for quick reporting (enrollment data, for example) from carefully selected samples of institutions. It is seldom that discussions in Congress require 100% accurate data about postsecondary education. Long-range trends, significant short-range shifts in response to policy changes, and approximate comparisons among various categories of data--these are more often the type of information required.

There also seems to be a problem of data accessibility and interchange. You can understand the government's sensitivity to publishing inaccurate data (as if someone else could ever come along and successfully challenge HEGIS results!) and to releasing information that some institutions consider confidential. But there is a point at which we must say, "Is it worth doing at all if the information is not available in a timely fashion to those who need it?"

I do not for a moment pretend to be an expert on the technology of data retrieval, but education seems to be many years behind in finding ways to feed in, update, and disseminate basic information from multiple sources that can be used in policy planning. We laymen are hoping that the rather complete data files from the National Commission on the Financing of Postsecondary Education will stimulate greater efforts in this area. We are even talking of installing our own remote terminals to draw on these data. But we must be sure we understand the nature of the several data files so we do not draw conclusions from relationships among data that should not be related.

Finally, I should mention that several people in Congress have discussed the possibility of supporting increased state efforts to collect basic data. Although the states continue to have the main responsibility for education, they have generally not been able to provide a wide range of information about their institutions or students. Some universities and some multicampus systems have good data, but they are useful primarily for internal uses and do not help the national planning effort. It will be interesting to observe the data collection efforts of the new 1202 State Commissions in this regard.

Evaluation of Present Policy

Once created, federal programs seldom die. They don't even fade away! But they do get modified. Normally, federal education programs are authorized for three to five years. When a committee is forced by the calendar to pass new legislation to extend some authority another few years, it is all too tempting to make a series of changes in an attempt to clarify confusion, smooth out administrative problems, or simply give it "a new look" to keep up with the times. With over 375 separate federal programs affecting postsecondary education, Congress is making a lot of changes each year!

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Congress does benefit from evaluation studies Members request be done by the General Accounting Office. We put considerable weight on these evaluations because they are carried out by "independent" evaluators and designed in response to specific congressional interests. The quality of GAO studies seems to be steadily improving.

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year after the law was substantially changed. So we have an evaluation on a program that no longer exists and are unlikely to have another evaluation study on the newer program before it is up again for renewal. The quality of these outside evaluations, in my mind, ranges from very poor to fairly good. Few seem to reflect the real dynamics of how a program actually gets implemented (as opposed to how the regulations say it is to be implemented) and what the impact of the program is on student choices, institutional behavior, state policy, or the achievement of specific objectives. These reports do provide useful descriptive data about a particular program.

Good evaluation studies beyond those done by GAO and those sponsored by the USOE are few and far between. We have few from the benefactors of federal aid (students, institutions, states). Yet, this is the area in which I feel many could make a contribution.

I have often suggested--and still feel it is valid--that any group of educators that spent six months evaluating a single federal program would become the "nation's experts" on that one program and could have a very substantial effect on its future. Many witnesses before our committee, for example, know a little about all the programs but cannot speak with real authority about any. We need to supplement this input with that from a wide variety of people who have taken the time to focus on a limited area.

I am thinking of something like this. A professor of higher education finds three or four graduate students interested in doing some "relevant" research. They decide to evaluate the Veterans Cost-of-Instruction program, created by the Education Amendments of 1972 and given $25 and $24 million in each of the last two fiscal years. This program was adopted with almost no substantive discussion in Congress and is still little understood. Since it is politically difficult to appear to be against veterans, the program is likely to continue beyond its real usefulness. And it will receive little attention in congressional hearings because of the bigger, more controversial issues.

So this small group decides to form a task force, including their campus veterans advisor, another advisor from a near-by community college, and a person in a state agency responsible for veterans programs. They proceed to read all the legislative history and regulations, interview the appropriate people in the federal government, visit a few schools receiving grants from this program, survey other institutional recipients by mail, write a report, deliver it to key persons in the executive and legislative branches, and follow up in various ways to make sure their work doesn't get lost in the shuffle.

There are good techniques and bad techniques for carrying this out, but there are no surefire secrets about influencing governmental programs that such a task force would need to know. Sometimes a research study needs the prestige and credibility of a proven, nationally known research organization. But an effective informal report on a federal program that no one else took the time to study seriously can have just as great an impact.

State and national organizations are other natural sponsors of evaluation projects. It is important to know how one particular program affects community colleges, or private liberal arts colleges, or the personnel policies of institutions. On many issues, a survey of 100 institutions could have a considerable impact. It would be wise in planning such a survey to consult with those in both branches of government who have the most interest in the program. (People put more credence in answers to questions they had a part in framing.)

I do not know how these efforts should be coordinated. Right now, the need is not to coordinate efforts, but to stimulate some effort. It would be valuable to have more than one group evaluate a program. On the other hand, too many groups asking questions of the same people would soon lessen the willingness of those people to cooperate in evaluation studies. Maybe we could get some things going and worry about coordinating them at some conference next year!

Analysis of Alternatives

This third area concerns the "big boys" (sorry. . . "persons") in education research. When many think of policy research, they think of fairly sophisticated analysis of policy alternatives. As I have pointed out, regardless of whether or not they are called policy research, the collection of basic descriptive data and the evaluation of specific federal programs contribute in major ways to the process of writing legislation. Many can get into the act in these two areas.

The analysis of alternative national policies requires more long-range planning, substantial financial resources, the latest technological tools, and experienced personnel. I sense that the nation's capabilities to undertake this sophisticated research is increasing rapidly.

Key members of Congress are trying to promote this kind of policy analysis. Representatives John Dellenback and John Brademas of our committee were very active participants on the National Commission on the Financing of Postsecondary Education and supported the development of the much-discussed NCFPSE analytical framework. We are encouraged that, along with the criticisms of this initial effort, several key research organizations are attempting to refine this approach to policy analysis.

Since several Congressmen criticized the education community in 1972 for the lack of sound analysis, we have been sent paper mountains of research reports. While I believe some Congressmen were sincere in wanting to see more research firsthand, the real criticism was that leaders of the education establishment had not generated (and therefore read) enough policy research to back up their recommendations and reactions. (This may be analogous to parishioners who want to make sure their pastor is a Bible scholar but are unwilling to study the Scriptures themselves.) At any rate, as the volume of policy-oriented research in postsecondary education increases, the need for synthesizers, translators, and interpreters takes on added importance.

A PROPOSAL FOR ACTION

In 1973, I made a proposal which I felt addressed these problems.* Essentially, the proposal was to establish a national center that could act as a coordinator of policy research. I know there is interest in the idea because within three weeks of publication I was approached by at least a dozen existing organizations which felt they were most qualified to be designated such a national center!

After many meetings and discussions on this topic, I still feel that some new mechanism is needed to bridge the gap between policy researchers and policy makers. This new mechanism should not replace anything that now exists. In fact, it should stimulate more of the good now underway.

Briefly, I feel that federal decision making would be enhanced if there was created a rather small organization to assist federal and state decision makers in applying available research data to their tasks. Some of the criteria which I feel important to such an effort are:

1. The organization should be private nonprofit, located in Washington, D.C.

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* "Why Won't Educators Help Congress Write Education Laws? A Proposal for a Natio al Center for Postsecondary Education Policy Research." The Chronicle of Higher Education, July 30, 1973.

2. The organization's focus should include all formal learning beyond the high school (excluding research issues related to how people learn).

3. The administrators of the organization should be independent of any existing association.

4. Funding should come from a variety of public and private sources.

5. An advisory council made up primarily of government policy planners and decision makers should determine the orgainzation's priorities.

It would be important to launch this effort in a way that is truly nonpartisan, staffed with individuals who have proven themselves to be effective in dealing with both the research community and the political process. Some functions of such an organization might include the following:

1. Develop an expertise in organizing and hosting invitational seminars and conferences of researchers and policy makers at a time when a key issue is ripe for discussion. It takes real effort and experience to do this well, but it is a useful technique for arriving at consensus and accommodation.

2. Provide a clearinghouse function for the several policy research centers and ad hoc research efforts.

3. Help train individuals to be comfortable and effective in both the research community and the government.

4. Monitor the legislative process and the executive agency planning cycle to call people's attention to existing information and research data that have a bearing on current discussions.

5. Assuming this monitoring was done well, communicate to the appropriate research organizations specific questions which state and local government officials are asking, with suggestions on how to develop responsive research projects.

6. Have key staff available on short notice to advise policy makers in need of specific information.

In the final analysis, the measure of impact on decision making would depend on the quality of individuals attracted to this effort. I would foresee a rather small staff which could draw on a wider range of individuals around the country. Most "full-timers" could be assigned for two or three years, but that is something difficult to control.

Unlike my earlier feelings, I do not believe the staff of this organization should themselves engage in substantive research. The coordination, interpretation, and dissemination of information is a big enough task in itself. To undertake the financial and staffing burdens of doing major research projects in-house would result in a bureaucracy too cumbersome to do the more important functions well.

The difficult question remaining is who will make the first move in creating such an organization. I know there are both funders and implementers interested. Perhaps it will take conferences such as this to gradually sift out the pros and cons and to arrive at an informal consensus about how to launch the effort without being divisive in any way.

This idea, of course, does not address most of the issues raised in the other papers. The substantive questions about postsecondary education policy research remain. But I believe we are at a time when some supportive leadership in the process of policy research is necessary to reap useful products.

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